Journal
OF THE AMERICAN VETERINARY MEDICAL ASSOCIATION

AVMA Convention—Cleveland, August 19-22, 1957

Contents continued on adv. pages 2 and 4

Vol. 130 **May 1, 1957** **No. 9**

Two dependable hog cholera vaccines

Corn States

CORVAC

Corn States

for use with serum

Nationwide veterinary acceptance has made Corvac a leader in the field of hog cholera prevention. Millions of pigs have been successfully vaccinated under widely differing conditions. Corvac may be used with a low serum dose when vaccinating normal, unexposed pigs. Antigenicity is not impaired when large doses of serum are administered. Seven stringent tests applied by Corn States Laboratories assure constant safety and potency.

CORVINE

for use with or without serum

Corn States

For practitioners who find conditions where vaccine may be used without serum, Corvine offers maximum effectiveness. However, the practitioner may administer Corvine with anti-hog-cholera serum when necessary, as there is little interference with immunization response. The same rigid tests applied to Corvac are used to prove the safety and antigenic potency of each Corvine serial lot.

Corn States LABORATORIES, INC.

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Norden

FOMENE

Provides quick relief of frothy bloat

FOMENE provides quick relief of symptoms of most acute bloat conditions, particularly "frothy" bloat.

- Reduces surface tension instantly to liberate entrapped gas.
- Helps prevent recurrent bloating.
- Versatile—administer directly into rumen with injection needle or small trocar; or use as drench or with stomach tube.
- Active ingredients are derived from natural edible sources—no interference with normal digestive functions.
- Cows like its alfalfa-like odor—makes drenching easy.

Fomene supplied in:

6-4 oz.; Gallons

NL 152—Box of 6, 4" 12 G. Injection Needles

NORDEN LABORATORIES Norden® **LINCOLN, NEBRASKA**

Journal of the American Veterinary Medical Association

CONTENTS

(Continued from Cover)

SURGERY AND OBSTETRICS

CLINICAL DATA

NUTRITION

CURRENT LITERATURE

THE NEWS

$15.00 per Annum **Single Copies, $ .75 Prepaid in U.S.**
Canada and Pan American Countries, $15.50; Foreign, $16.50
Published semimonthly at 600 S. Michigan Ave., Chicago 5, Ill., by the American Veterinary Medical Association. Second class mail privileges authorized at Chicago, Ill., January, 1956. Additional entry at Mendota, Ill.

Correspondence

March 13, 1957

Dear Dr. Aitken:

I have seldom been in such perfect disagreement with a contributor to the JOURNAL as I am with Dr. Vierheller's comments on veterinary examinations at dog shows *(J.A.V.M.A.,* March 1, 1957: adv. p. 10).

It seems generally agreed that the dog show veterinarian's primary function is to protect the entrants from exposure to contagious diseases and secondarily to give expert opinion on anatomical questions when requested by one of the judges or officials.

The most important contagious diseases are the serious virus diseases (distemper, hepatitis, hard pad), infectious tracheobronchitis, and infectious dermatitis. Urinary tract or intestinal tract infections, while they might be contagious, are found in so many chronic carriers that these can not be controlled; they are more or less "chance pathogens" and there would be little danger of widespread infections developing from exposure.

Any practitioner could spot most full-blown cases of the virus diseases by simply observing the actions and membranes; of kennel cough by rat-

(*Continued on adv. p.* 52)

MISCELLANEOUS

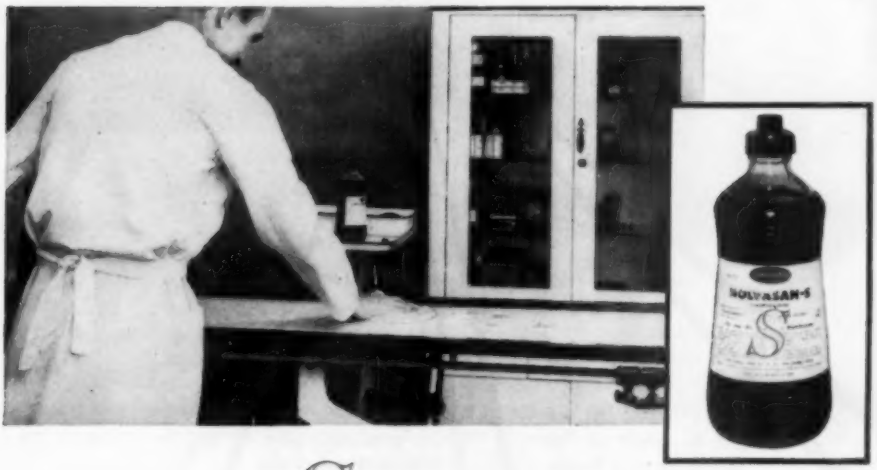
ORGANIZATION SECTION

SCENTED

Nolvasan®-S

CHLORHEXIDINE

Deodorizes as it sanitizes



SCENTED Nolvasan solution has been introduced to meet the requests of numerous veterinarians for a disinfectant especially adapted for hospital use. Its heavy, but pleasant, scent masks offensive odors and, even in the recommended dilution of ½ to 1 oz. to the gallon of water, the scent is persistent. The powerful bactericidal and virucidal properties of Nolvasan-S make it ideal for sanitizing tables, walls, cages, and utensils.

FORT DODGE LABORATORIES, INC., Fort Dodge, Iowa.

Made in U.S.A. by arrangement with Imperial Chemical Industries Limited

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NUTRIL GRANULES IS A PALATABLE VITAMIN AND LIVER SUPPLEMENT

with VITAMIN B_{12}, plus ESSENTIAL TRACE MINERALS.

Each 15 Gm. (approximately 1 tablespoonful) contains:

Vitamin A	2500 Units
Vitamin D	1000 Units
Thiamine Hydrochloride	5 mg.
Riboflavin	1 mg.
Pyridoxine Hydrochloride	1 mg.
Pantothenic Acid	1 mg.
Ascorbic Acid	5 mg.
Niacinamide	5 mg.
Desiccated Liver	0.5 Gm.
Vitamin B_{12}, Crystalline	2 mcgm.
Dicalcium Phosphate	5 Gm.

Plus Amino Acids and Trace Minerals Natural to Brewer's Yeast.

Available in 10-oz. Jars with Detachable Labels for Dispensing and in 10-lb. Cans.

nutril granules

SWINE
For the Prevention and Treatment of Nutritional Enteritis.

DOGS AND CATS
Diet Supplement for Pregnant or Lactating Animals and those Convalescing from Infectious Disease or Parasites

CALF
For a Deficiency of Vitamins A and D and Certain B-Complex Vitamins Predisposing Calf Scours.

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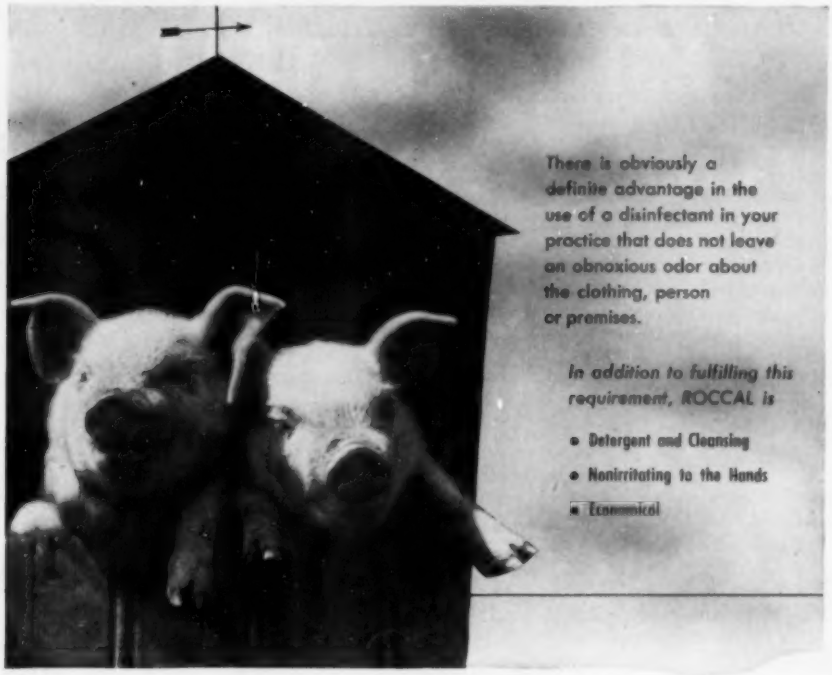

There is obviously a definite advantage in the use of a disinfectant in your practice that does not leave an obnoxious odor about the clothing, person or premises.

In addition to fulfilling this requirement, ROCCAL is

- Detergent and Cleansing
- Nonirritating to the Hands
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DEPENDABLE DISINFECTANT

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ROCCAL is eminently useful as a germicide. It is not for surgical use but is intended for the general disinfection of floors, walls, kennels, stables, milking equipment, operating tables, furniture, wash tubs, eating and drinking utensils.

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informative data sent on request

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AVMA ☆ Report

Participation in Association Activities

Indoctrinating New Members

F. R. Booth, D.V.M.
Elkhart, Indiana

Presented at the AVMA Public Relations Conference, San Antonio, Oct. 14, 1956

It would hardly be possible to assign a subject to me that would have any more personal appeal than the one dealing with the acceptance and indoctrination of new members into a veterinary society. Actually, the subject is so large and important to the welfare of the entire profession that the occasion makes me feel a bit like the Texas school girl who might have won the national spelling contest, except that she could not spell the word "small."

Any remarks that I make must necessarily be a delineation of successfully proved results in my own local veterinary association. You will pardon my pride in relating some of the history of our association as a background to what we have accomplished.

The Michiana Association, a small group located in north central Indiana and south central Michigan, began in 1939, as a direct result of a need for improved relations among veterinarians then in practice in the area.

Since that time, we have never failed to hold a monthly meeting. We meet 12 months out of the year, including ten strictly professional meetings. We have a picnic in July and a Christmas party in December.

The original organization meeting was attended by eight practicing veterinarians then in the area. At the present time, there are only three of those men still in active practice. However, our number has grown to more than 50 members. Our attendance records show that we can always depend upon about 90 per cent attendance at all meetings.

Twelve of our members limit their practice to small animal medicine and, of the 12, eight are connected with member hospitals of the American Animal Hospital Association. The remainder are general practitioners. The average age of this group is approximately 35 years.

Twelve members are regular contributors to state and national programs. At the present time, one of our members is president of the Michigan Veterinary Medical Association; another is president-elect of the Indiana Veterinary Medical Association; a third is vice-president of the American Animal Hospital Association; and a fourth is on the executive board of that society.

How have we developed this membership? There has been an influx of almost 50 new faces into the area the past 17 years. From this, we should logically assume that the original approach to these men must have had some meaning for them and their future.

Indoctrination can only follow acceptance and membership—acceptance on the part of the members already in the society and in the area. We must first recognize that these newcomers, these new graduates, are veterinarians in every sense of the word and are entitled to the respect that should be accorded a professional man.

It would be folly for us to say, "Let them prove themselves first before they become a member of our association." Actually, this is the time that they need guidance most and we should not attempt to make them prove themselves. Most of these men, the new graduates especially—and they are the ones that we are more concerned with—are nearing 30 years of age. The majority are family men. They have spent at least six years of their busy and important lives in attaining a cherished ambition. It must have been a cherished ambition or they never would have put forth the effort in the first place.

The acceptance of these men, then, is our first responsibility. It is easy to forget, or even not appreciate, what it means to a stranger in a strange area, and this is one of the basic tenets of courtesy we must extend to them.

According to the best rules of etiquette, we are obligated, as an established practitioner, to make the first formal visit. In our area, we make it a combined personal visit and a visit in the interest of our local association. We make every attempt to offer them assistance, our good will, and best wishes for their future.

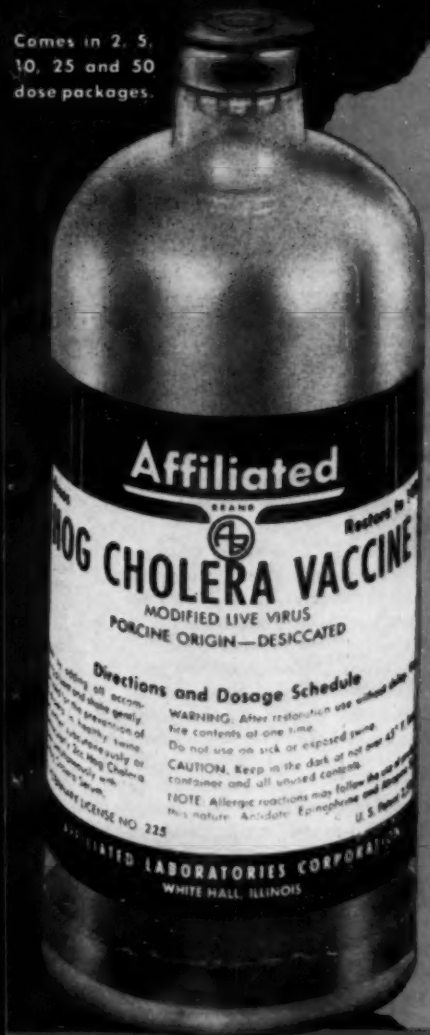
When we offer our assistance, I think we should keep one thing in mind and that is:

For Immediate – Solid – Long Lasting

IMMUNITY

AGAINST HOG CHOLERA

Comes in 2, 5, 10, 25 and 50 dose packages.



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HOG CHOLERA VACCINE

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Affiliated Brand Hog Cholera Vaccine is a modified live-virus of porcine origin. With the proper serum dose it gives *immediate* protection . . . is safer than virulent virus . . . will not spread hog cholera. Every serial is tested for potency, purity, safety, moisture and vacuum; equals or surpasses rigid government requirements.

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PRODUCED FOR AND SOLD TO GRADUATE VETERINARIANS ONLY

We offer everything we know and everything we have free to them for the asking.

This might also come under the heading of good professional ethics within the profession. The new prospect that comes into our area deserves and expects a sponsor to our local organization; the same should be true for the state organization. We make an attempt to have one of his nearest neighbors become acquainted with him, invite him to his first meeting and, whenever possible, accompany him to that meeting. In this way, we avoid the stigma of a stranger in a strange area, trying to find some common ground with us when he needs it most. Our introduction of this man to his neighbors and to the society forestalls the circumstance of somebody making the remark, on the side, "Well, who is this guy?"

We have made it a practice, and our rules are continually being changed and improved, that one of our members proposes this candidate for membership. He is duly voted into the organization at one of the regular meetings by those members in attendance, during his absence from the room. In this way, he is made to realize that this is not just a simple gesture on our part, that it is not all cut and dried, or anything of that kind. We try to impress upon him, when he returns to the room, that we will expect something of him, some contribution of his to this society in the days to come.

It is paramount, we have found, that a professional society can not long exist on hospitality and a membership card alone. We can not depend upon last minute arrangements for a program, because this will not long suffice for either new or old members. According to our experience, a professional program is absolutely essential at least 80 per cent of the time.

Some years ago, we established the practice of arranging our programs one year in advance. We divided them as evenly as possible between small and large animal subjects.

Individual members are made responsible for each program; he contacts the speaker and sees that all the necessary arrangements are made, such as personally bringing the speaker to the meeting and making sure that all needed materials have been supplied. By this method we rarely come up with the absence of a speaker or a program.

We immediately urge these new members to begin thinking and taking part in the preparation of these programs. They are new men; they come, possibly, from distant schools. They have acquaintances we do not know, men who can contribute something to our program. We like to have them take part because it results in our contacting and having speakers of merit.

The women's auxiliary of our association, which is very definitely organized, took on the job of providing a printed program for our association. This program includes all the speakers for the coming year. The women have their own program which is also printed. The printed program also includes a roster of membership, so that we can quickly find the name of a colleague, his address, his phone number, and other information we may wish to have.

These programs are so arranged that they carry over one month after our election, so that the new officers coming in are not burdened with trying to immediately arrange a program for the next month.

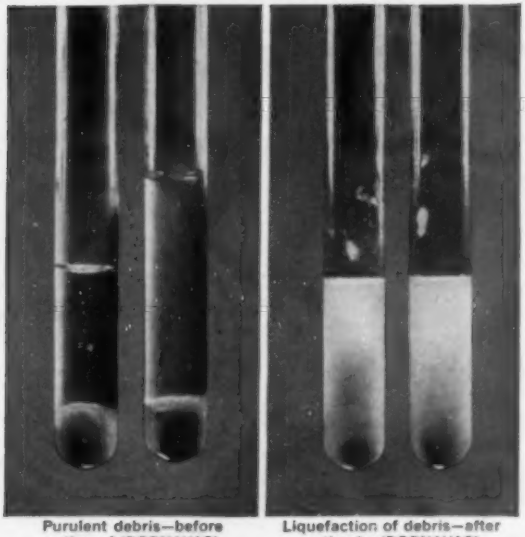
As a more direct approach for these new members, we have tried to solve some of their most troublesome problems. We prepare a minimum fee schedule for their guidance, so that they know the usual charge in the area. Along with this, we give them a list of clients who may abuse the profession and the services of its members.

Last, but certainly not least, is the wife who, very often, proves to be the essential spark plug to get the husband to the meetings. She, too, is made just as welcome as is her husband, because here she can find guidance and help. Probably, this is her initial attempt at being a professional wife. Here she finds friendships and help from those who have had much experience. This, to us, means indoctrination.

The new member receives a program for the coming year. From it, he knows exactly what is in store for him. In looking over the subjects which will be presented, he knows that he can not afford to be absent.

He has received guidance on the fees that he could be expected to charge. He has received advice on clients in the area. He realizes that he is becoming an integral part of an association that is tailored specifically to fit his needs. But, probably more important than anything else, he has been presented with the good right hand of his neighbor, which is the most useful instrument to him in his beginning days. Not just a hand of fellowship, but it is a hand for help, to be called upon as he needs it.

By these various approaches, we believe results evolve to the end that a more capable and satisfied practitioner has entered our area and will be a pleasure to his community.



Purulent debris—before action of 'DORNAVAC'

Liquefaction of debris—after action by 'DORNAVAC'

Speeds the healing process

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PANCREATIC DORNASE

Liquefies purulent debris, permits drainage; acts on extracellular accumulations and separates disintegrating cells from living tissue, does not act on living tissue; liquefying action aids diffusion of antibiotics at the source of infection; free of the side effects usually attributable to enzymatic preparations of streptococcal origin.

Supplied: Vials containing 100,000 units, with sterile diluent.

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equipment news

for the practicing veterinarian

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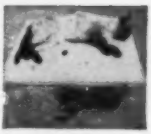
NEW! the improved Frank's Fetal Extractor

Nicholson now brings you the improved Frank's Fetal Extractor. Proved in thousands of cases, this instrument deftly assists with an infinite amount of pull on the newborn. Makes difficult OB cases almost simple. Assembles in a minute, completely portable, costs $54.45. Write for folder N-F.

NEW! radiant heated warming panel



This electrically operated radiant heat panel eliminates messy boxes and blankets, hot pads, etc., when keeping weanlings warm, treating patients in shock. Heavily Plasti-Plated to resist stains, urine, etc. Shock-proof. 2 convenient sizes, smallest costs only $16.75. Uses 110 v. current. Write for folder N-R.

NEW! Copon kennel paint refinishes rusty kennels

This new special plastic paint was developed for refinishing metal kennels. Gives hard, baked-enamel-like surface without baking. Makes your old rusty kennels like new. Works wonders on wood and concrete too. Can be brushed, rolled, or sprayed. Choice of colors. Write for folder N-C.

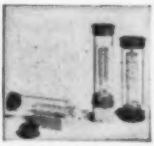
durable, metal sheathed instrument/serum cases

Baked black enamel over steel with brass trim. 5 standard models; light weight yet built to take knocks! See folder N-1 for sizes, prices. Most are in stock, ready to ship.

hi-current electric firing iron

Most modern, up-to-date way to fire horses, remove warty growths, ear polypi, tumors. Complete with 11 points/tips. Operates on 110 v. barn current. A superb instrument for horse practice. Write for folder N-6.

NEW! clear plastic cases for your glass syringes



Keep syringes sterile, clean in these light unbreakable plastic cases. Covers for 5, 10 and 20 cc. syringes, $5.75 set, folder N-4 gives details.

electric "B" dairy cow branding iron

Heats in 90 seconds, makes a clean brand, weighs only 11 ounces. T and V brands available too. Uses 110 v. current, won't smoke. Write for folder N-3.

NEW! plastic sign letters for your office

Our new selection of beautiful weatherproof plastic signs will dress-up your office or clinic. All sizes, colors; easily installed. Write for folder N-5. We ship them ready to install with simple tools.

Please send me the folders I've checked below.

- ☐ folder N-1 cases
- ☐ folder N-2 Plasti-Plate
- ☐ folder N-3 "B" irons
- ☐ folder N-4 syringe cases
- ☐ folder N-5 sign letters
- ☐ folder N-6 firing irons
- ☐ folder N-F extractor
- ☐ folder N-R radiant panel
- ☐ folder N-C COPON paint

DVM

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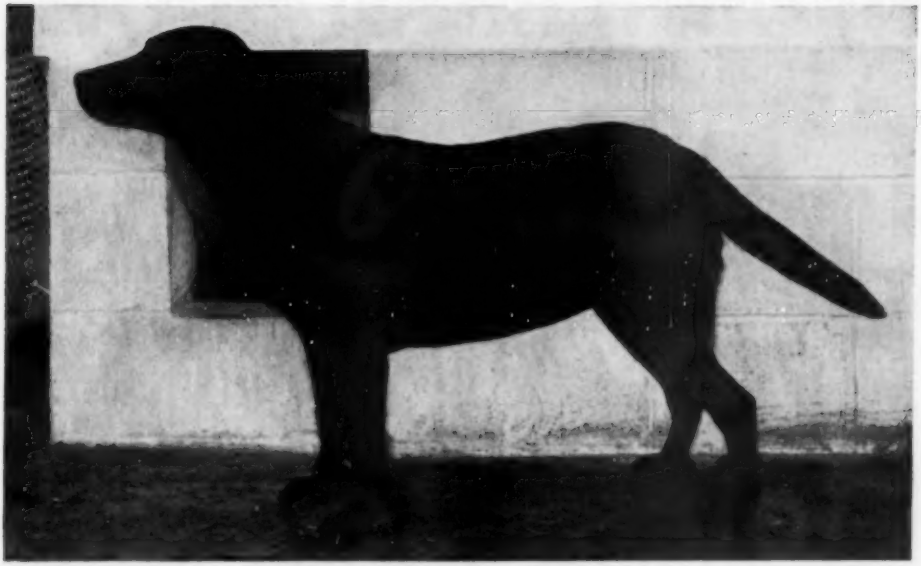
Before you buy cages, write for folder N-2 on our amazing new Plasti-Plated kennels. Rock-hard, glass-smooth, seamless surfaces. Inexpensive, easy to do-it-yourself! We supply materials and complete instructions. Will furnish complete kennels if you prefer.



This dog has never tasted meat

...yet is in perfect condition

Many dog experts feel that dry dog food should be supplemented by fresh meat. And the makers of Friskies recognize that the addition of meat is a widely accepted practice among dog breeders, kennel men and dog owners.

HOWEVER, in the case of Friskies, we've found in test after test that adding fresh meat to Friskies Meal is not necessary. Friskies in its meal form, actually supplies all the nourishment of finest fresh meat—plus the other necessary food elements, vitamins and minerals for a complete and fully balanced dog diet.

CONTINUOUS MAINTENANCE TESTS. The Labrador brood bitch pictured above is one of many dogs undergoing continuous maintenance tests at the Friskies Research Kennels. Fed since weaning on a diet of Friskies Meal exclusively, she is typical of four generations of dogs grown to maturity and maintained in perfect condition on this scientifically balanced dog food.

SPLIT-LITTER TESTS. In these special tests, half the litter is fed on Friskies Meal alone, while the other half is fed Friskies Meal with the addition of fresh meat and other foods. In no instance has any benefit been noted from the addition of supplements to the Friskies Meal diet. You can feed and recommend Friskies Meal as a complete and balanced dog food diet.

Mixes instantly — Just add water. Ready at once. Won't mush. Feeding bowl rinses clean. Complete nutrition at its best.

FOR VARIETY—Canned Friskies. Principal ingredient lean red horse meat including choice steaks, chops, roasts. A complete and perfectly balanced dog food.

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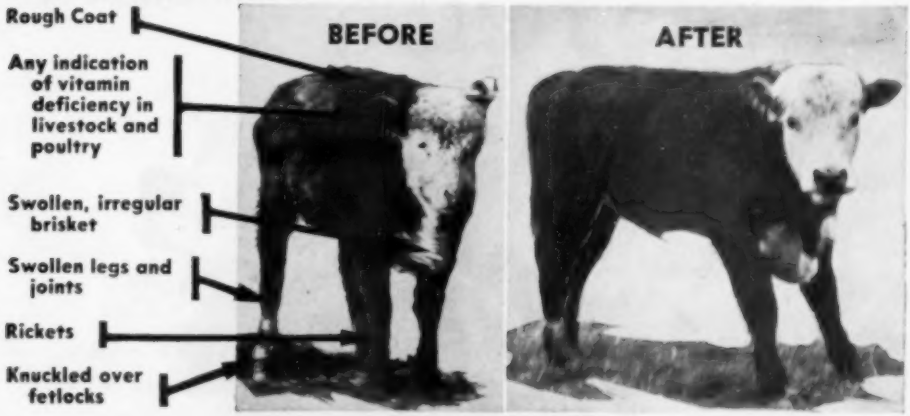
RIB-AD No. 1 — A PROTEIN BASE VITAMIN SUPPLEMENT

RIB-AD No. 2 — A VITAMIN-MINERAL SUPPLEMENT*



vitamins "stepped up" —— new vitamins added

Now Rib-Ad No. 1 and No. 2 have added "cure and prevention" power:

Vitamin A 113,500 USP units per pound.

Vitamin D_2 150,000 USP units per pound.

Vitamin D_3 21,300 IC units per pound.

Vitamin B_{12} 133 micrograms per pound.

Riboflavin (B_2) 20 milligrams per pound.

This boost of almost 10,000 more USP units of Vitamin A per pound increases its potency in fighting deficiency troubles.

Four-footed animals have available 171,300 units of Vitamin D per pound . . . poultry have available 21,300 units of Vitamin D_3 per pound.

Vitamin B_{12} has been added at a level to meet the heaviest Cornell University recommendations.

***Rib-Ad No. 2 gives you a "mineral" bonus at no extra cost—contains calcium and phosphorus, as well as 7 important trace minerals.**

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Order now for your clients! Available in 100 lb. drums and 25 lb. pails.

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VARITON cream

diphemanil methylsulfate 2%

relieves itching and speeds healing in "hot spot" eczemas, pustular and nonspecific dermatoses

STOPS that scratching reflex

...an unusually effective topical agent

Relieves irritation and suppresses inflammation after one or two applications; dries lesions and permits scabs to form, usually in 24 hours. In mild cases complete healing occurs in two to three days.

...prevents spreading and secondary infection

Prompt relief of itching reduces danger of self-mutilation and infection due to scratching.

...well tolerated

No systemic side effects or sensitivity reactions have been observed.

AN EXCELLENT DISPENSING ITEM

VARITON inhibits excessive secretion of acetylcholine at nerve endings, the mechanism which triggers pruritus, inflammation and edema.

VARITON Methylsulfate Cream 2%:
50 Gm. tube, boxes of 1, 12 and 72;
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VARITON® Methylsulfate, brand of diphemanil methylsulfate, veterinary.

PROTECTION AGAINST THESE COMMON POULTRY DISEASES

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Two nitrofurans—FUROXONE and FURACIN—exhibit unique advantages in the prevention or control of avian diseases. Low concentrations provide wide-spectrum antimicrobial activity yet permit the development of *natural* immunity. Rapidly metabolized, there is no danger of drug residue in tissue, even if birds are medicated up to the time of slaughter. The nitrofurans have no deleterious effect on eggs or egg production; provide protection to turkeys raised on range.

FUROXONE® CONCENTRATE VETERINARY

BRAND OF FURAZOLIDONE

For the prevention or treatment of salmonelloses (fowl typhoid, pullorum and the paratyphoids); histomoniasis (blackhead); hexamitiasis; synovitis (infectious arthritis) due to a filterable agent, and susceptible secondary bacterial infections associated with C. R. D. and nonspecific enteritis. Increases the efficiency of food utilization at lower dosages.

EASILY ADMINISTERED IN FEED

In bacterial infections, FUROXONE Concentrate is used at the prophylactic level of 1.5 oz. to each 100 lbs. of feed and at the control level of 3 oz. per 100 lbs.

In protozoal infections, a prophylactic level of 3 oz. per 100 lbs. feed and a control level of 4.5 oz. per 100 lbs. feed are usually recommended.

FURACIN® WATER-MIX VETERINARY

BRAND OF NITROFURAZONE

New dosage form of FURACIN—an effective coccidiostat against E. tenella and necatrix. In cartons of 330 Gm. with plastic scoop, to medicate 50 gallons of drinking water.

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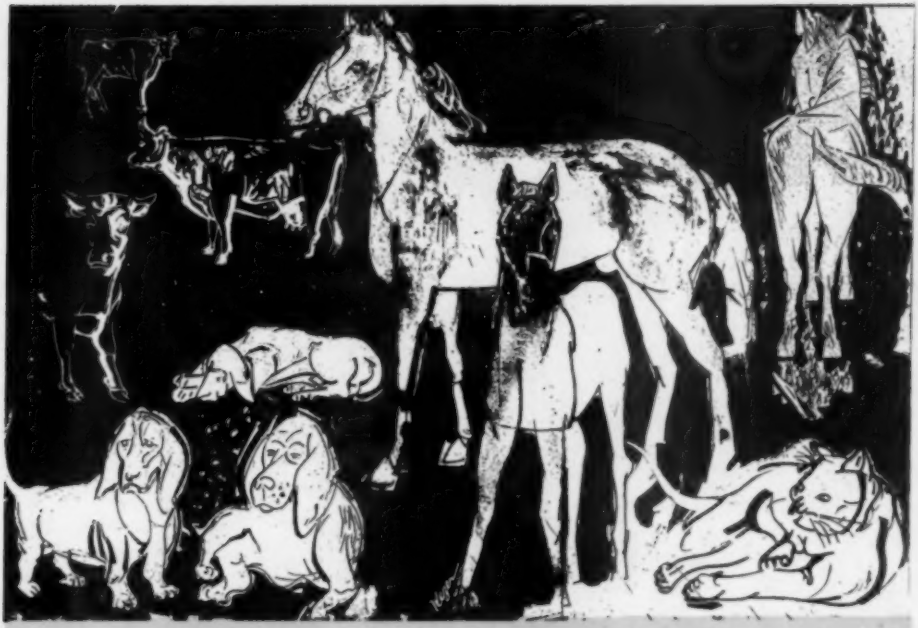
NITROFURANS—
A NEW CLASS OF
ANTIMICROBIALS—
NEITHER ANTIBIOTICS
NOR SULFONAMIDES

EATON LABORATORIES,
NORWICH, NEW YORK



prompt control of surface infections with

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brand of nitrofurazone

Prevention or treatment of bacterial infections of:

- surgical & traumatic wounds
- burns
- eye & ear
- cutaneous ulcers
- pyodermas
- osteomyelitis of compound fractures

FURACIN products contain FURACIN 0.2% in water-miscible vehicles. Available as FURACIN Dressing Veterinary in jars of 4 oz. and 1 lb.; FURACIN Dressing with Anesthetic (butacaine sulfate 0.5%) in tube of ½ oz. and jar of 1 lb.; FURACIN Soluble Powder in plastic "puff" bottle of 10 Gm.; FURACIN Solution in bottles of 2 oz.; 1 pint; 1 gal. FURACIN Ear Solution in bottles of 1 fl.oz.

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brand of nitrofurfuryl methyl ether

Triple-action fungicide, sporicide, bactericide in:

- dermatomycoses and their secondary bacterial infections

Available as FURASPOR Liquid Veterinary, containing FURASPOR 0.4%, quaternary ammonium compound 0.5%, in a water-miscible vehicle of benzyl benzoate 15% and water. Odorless and nonstaining. Bottles of 2 fl.oz. with dauber top, and 1 pint.

NOTE: FURASPOR is *contraindicated* for cats and rabbits because of the benzyl benzoate content.

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NITROFURANS—A NEW CLASS OF ANTIMICROBIALS—NEITHER ANTIBIOTICS NOR SULFONAMIDES

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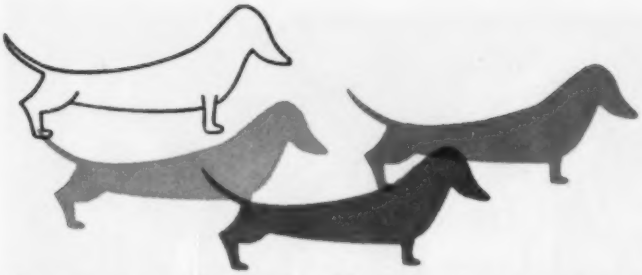

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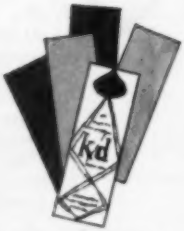

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*University of Wisconsin Bulletin 518, Part I, January, 1956

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JOURNAL
of the American Veterinary Medical Association
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Vol. 130 MAY 1, 1957 No. 9

Symposium on the Mucosal Disease Complex

I. Infectious Bovine Rhinotracheitis in Feedlots of Colorado

W. W. BROWN, D.V.M.; T. L. CHOW, Ph.D.; RUE JENSEN, D.V.M., M.S., Ph.D.
Fort Collins, Colorado

INFECTIOUS bovine rhinotracheitis (IBR), a disease characterized by inflammation of the upper respiratory system and caused by a virus, has been recognized in Colorado feedlots since 1950.

Although the disease has been seen in both dairy and feedlot cattle, this study is limited to feedlot cattle.

This survey includes an investigation of over 100,000 cattle in 64 outbreaks of IBR during the period August, 1954, to July, 1956. Outbreaks are differentiated as acute and sequential. Mortality is relatively low but morbidity is high. The disease has occurred in all seasons, under various climatic conditions, and has occurred repeatedly in many feedlots. In Colorado, it has occurred only in the South Platte River Valley, which covers eight counties in the northeastern part of the state. Approximately 80 per cent of the cattle fed in Colorado are in this area.

REVIEW OF LITERATURE

Since IBR has been recognized as a disease entity of cattle, it has been reported in many states among both dairy and feedlot cattle. In California, in 1954, it was reported as an acute upper respiratory infection both in dairy cattle[1] and in feedlot cattle.[2] In 1955, it was described[3,4] as infectious necrotic rhinotracheitis of feedlot cattle in Colorado. In an epizootiological study[5] of IBR in one Colorado feedlot, the morbidity was reported as 10.6 per cent, of which 6.3 per cent died. Infection was usually evident ten to 150 days after animals were put on feed, 55 per cent in 26 to 42 days.

OCCURRENCE

Under feedlot conditions, cattle usually do not contract this disease until they have been in the feedlot for at least three weeks, the majority after they have been on feed one to three months.

There seemed to be no significant difference in susceptibility of cattle originating from western states and from other geographic areas, of beef and dairy breeds, or of cattle of different ages and sexes. Due to the limitation of age of feedlot cattle, no animals younger than 6 months are included in this study.

In one instance, cattle of the same origin were brought to the premises and promptly divided into two groups. One group was placed on a fattening ration in the feedlot and the other group was released to an adjoining pasture. Cattle in the feedlot contracted IBR in 70 days, while the cattle on pasture were not affected. Later, the pastured cattle were put on a fattening ration and developed IBR in about two months.

The major ingredients (alfalfa, corn, barley, milo, and corn silage) are basically the same in most rations in Colorado, varying only in the percentage of roughage to concentrate. Protein supplements used in this area are oil-extracted linseed, soybean, and cottonseed meal. Feed additives,

Research veterinarian, Colorado Cattle Feeders' Association, Denver (Brown); College of Veterinary Medicine and Animal Disease Section, Experiment Station, Colorado State University, Fort Collins (Chow, Jensen).
This study was supported, in part, by the Colorado Cattle Feeders' Association, Denver, and Swift and Company, Chicago, Ill.
This symposium was presented before the combined sections on General Practice and Surgery and Obstetrics, Ninety-Third Annual Meeting, American Veterinary Medical Association, San Antonio, Texas, Oct. 15-18, 1956.

such as diethylstilbestrol, antibiotics, and anthelmintics, were employed in the ration by some feedlots in which the disease occurred.

There were more cases of this disease during the fall and winter than during the spring and summer, probably because there are more susceptible animals in the area during these seasons. The disease was observed under all types of climatic conditions.

Rhinotracheitis does not always spread by direct contact. In large feedlots, it may be present in pens that are separated by pens of unaffected cattle. Cattle may share a common water tank, with those in one pen affected, while those in the other pen remain normal. How the disease is transmitted is not known, but observations of the experimental and naturally-occurring disease indicate that it is transmitted by contact. No specific pattern of spread has been observed.

Sanitation, husbandry, and type of fattening ration do not appear to be important factors.

In the acute type of onset, the disease develops nearly simultaneously in the animals, with the morbidity varying from low to nearly 100 per cent, over a period of one to two weeks. This type is the more common and the course in the herd is shorter than when the cases develop in sequence. In the sequential type, the disease develops in a few cattle at one time over a period of four to six weeks. In some instances, the disease begins with the acute type and subsequently changes to the sequential type. In the larger feedlots, where cattle have been previously affected, the course is usually of the sequential type.

The over-all average morbidity of this disease was 18 per cent but it varied from 5 to nearly 100 per cent. There probably were many subclinical cases. If a serological study had been conducted, the morbidity percentage would have been higher. The mortality was 3 per cent of clinically sick animals. The deaths are due to secondary infections, such as bronchopneumonia.

In 63 outbreaks, accurate information could be compiled as to age and sex (table 1). The size of the herds varied from 100 to 7,000 cattle.

Older animals in the feedlot, or dairy cows associated with the feedlot, did not contract the disease but the number of animals over 2 years old was small. In the yearling group, the mortality rate was significantly higher in the heifers than in the steers.

CLINICAL CHARACTERISTICS

In the early stage of the disease, animals showed depression, anorexia, excessive salivation, profuse nasal discharge usually blood-tinged, and accelerated rate of respiration. The body temperature was usually 104 F. to 107 F. but higher temperatures were not uncommon.

The animals then developed a dry, unproductive cough, and dyspnea with stentorian oral respiration. Conjunctivitis with lacrimation was occasionally present. The mucous membrane of the anterior nares showed hyperemia. Excessive seromucus exudates were present.

Affected animals showed a distinct loss of weight but usually recovered in two to seven days. However, complications, such as bronchopneumonia, "knuckling," abortion, and necrotic laryngitis, often prolonged the course to several weeks.

The necropsy findings were essentially the same as those previously reported,[4] *i.e.*, various degrees of rhinitis, tracheitis, and laryngitis with bronchopneumonia.

DIFFERENTIAL DIAGNOSIS

The characteristic inflammation and deposition of exudates on the mucous membranes of the larynx and trachea can be observed by the use of a laryngoscope.

In IBR, the clinical signs are primarily due to involvement of the nasal meatuses and trachea, while in shipping fever they are pneumonic in nature. Shipping fever usually appears within the first two weeks

TABLE 1—Rhinotracheitis Morbidity and Mortality of Feedlot Cattle

	Calves		Yearlings		2-year-olds		Over 2 years		
	Heifers	Steers	Heifers	Steers	Heifers	Steers	Female	Male	Total
Total	10,175	3,352	29,025	8,305	441	11,933	296	158	63,685
No. sick	1,179	427	8,247	2,183	197	3,506	0	0	15,741
No. died	18	256	256	20	3	42	0	0	342
Morbidity	11.6%	28.4%	28.4%	26.3%	44.6%	29.4%	0%	0%	24.7%
Mortality	1.5%	0.7%	3.1%	0.9%	1.5%	1.2%	0%	0%	2.2%

after arrival in the feedlot, whereas IBR does not appear until the animals have been on feed for a longer time.

Another similar disease is necrotic laryngitis which manifests itself as a necrosis of the mucous membranes and arytenoid cartilages of the larynx. However, this condition may become a sequela to rhinotracheitis.

In malignant catarrhal fever, conjunctivitis, ophthalmitis, and nervous symptoms are characteristics of differential value.

In mucosal disease and virus diarrheas, the primary involvement is in the digestive tract, which is not true in IBR.

TREATMENT

There is no specific treatment for rhinotracheitis. However, good supportive treatment may help to reduce the seriousness of the disease and the secondary complications.

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II. Pathology of a Mucosal Disease of Cattle

F. K. RAMSEY, D.V.M., Ph.D., and W. H. CHIVERS, D.V.M.

Ames, Iowa

In 1951, an apparently new disease in cattle was encountered and named mucosal disease.[1] Since that time, cattle with this condition from 12 affected herds in 1951, 12 herds in 1952, 17 herds in 1953, 23 herds in 1954, 25 herds in 1955, and 28 herds in 1956 (reported later) have been admitted to the Iowa State College Veterinary Clinic for study and diagnosis. A diagnosis of mucosal disease has been made in animals necropsied at the Iowa Veterinary Medical Diagnostic Laboratory from 22 additional herds. Mucosal disease has now been recognized in 20 states and Canada. Deer have been found susceptible.[2]

From the School of Veterinary Medicine, Iowa State College, Ames.

Fig. 1—Surface exudate removed from the muzzle and lower lip of a cow shows it is mainly surface necrosis.

This condition has been seen predominantly in Hereford and Aberdeen Angus cattle, and it has been found in Shorthorn, Holstein-Friesian, and Guernsey breeds. Most of the animals have been between 6 and 14 months old. The incidence has been greatest in winter and early spring, especially in the months of February and March, but it has occurred in every month of the year. The morbidity rate varied from 2 to 50 per cent in different herds, and the mortality rate of affected animals was above 90 per cent.

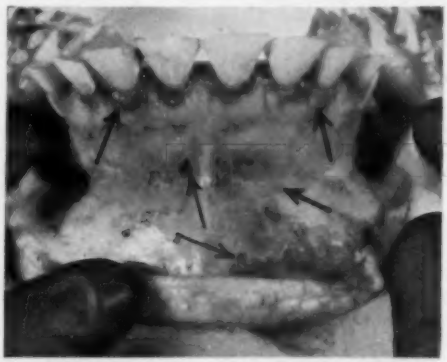

Fig. 2—Typical erosions and ulcers of buccal mucosa of the lower lip of a cow. Notice erosive gingivitis.

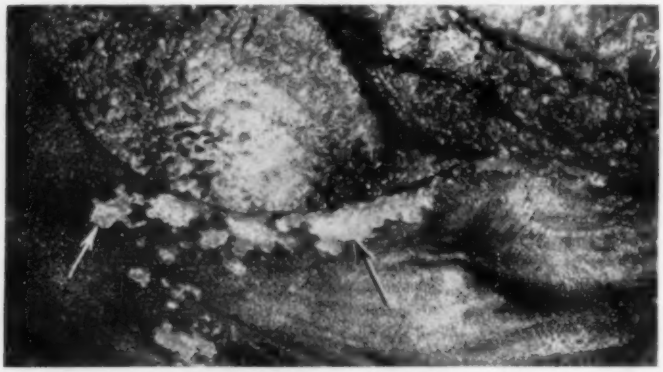

Fig. 3—Characteristic erosions of rumen pillars in a cow with mucosal disease.

Mucosal disease is characterized by initial elevation of temperature, with lysis in two or three days; decreased appetite followed by anorexia; constant or intermittent severe diarrhea, often hemorrhagic; and rapid dehydration with marked loss of weight. Slight opacity of one or both corneas and increased lacrimation were observed in ten herds. There were no central nervous symptoms. Examination of the nostrils, muzzle (fig. 1), gums, (fig. 2), lips, tongue, and oral cavity usually revealed erosions and ulcerations of varying sizes and shapes. Foul-smelling mucopurulent exudate was often observed hanging from the nostrils and muzzle.

Routine bacteriological culture studies of kidneys, liver, spleen, and heart blood gave uniformly negative results. Transmission studies were inconclusive. However, transmission studies[3-5] in three other stations suggest that it is caused by an infectious agent.

Blood studies revealed an undulation of leukocyte numbers with transient leukopenia.

Complete necropsies were performed on 116 animals from 87 herds. Microscopic studies represent approximately 5,000 tissue sections taken from 103 animals.

Pathological alterations in this disease varied considerably. The lesions were primarily erosive, ulcerative, and cystic, being confined principally to the lamina epithelia and mucosa of the alimentary canal (fig. 3, 4). Hyperemia and hemorrhage were

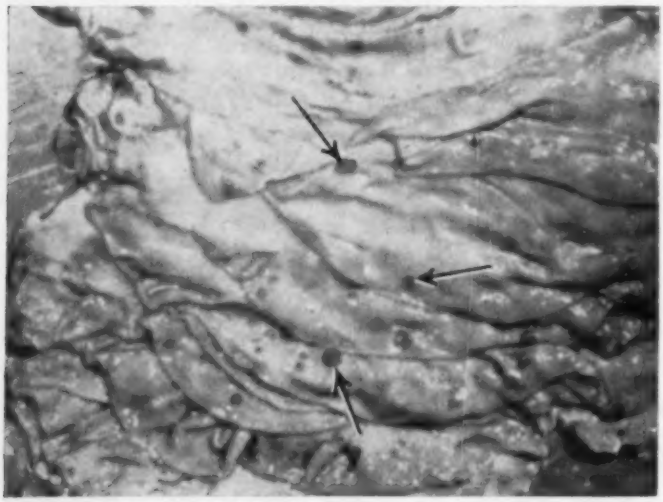

Fig. 4—Lesions of the fundus of the abomasum in a cow showing a distinct halo and circumscribed with a ring of petechial hemorrages.

common findings but marked leukocytic infiltrations expected to accompany severe gross lesions were not always found.

The liver generally appeared normal, but cloudy swelling, fatty degeneration, and centrolobular necrosis were observed in some cases. Usually no macroscopic or microscopic lesions of the pancreas were found. No lesions were found in the serous salivary glands but an excessive production of mucus was always found in the mucous salivary glands.

Lesions of the circulatory system consisted of hyperemia, hemorrhages, thromboses, arteritis, and periarteritis. Lymph nodes often showed no manifest reaction or were only slightly edematous. Micropathological alterations were definite in many lymph nodes, consisting of a marked decrease in mononuclear cells and coagulation necrosis of the lymph nodules.

Erosions extended from the muzzle into the nares for 3 or 4 cm. in about 80 per cent of the cattle. Catarrhal rhinitis with erosions and ulcerations of the anterior ventral turbinate was present in many animals.

Macroscopic lesions of the kidneys were not usually evident but medullary hyperemia and fatty degeneration were sometimes observed on gross examination. The most consistent microscopic alteration was pronounced cloudy swelling of renal epithelium. Catarrhal, severe erosive, and ulcerative posthitis were frequently found. Necrotic vulvitis of the labia was found in some females.

Gross and microscopic alterations of the central nervous system were not found, except for some passive hyperemia and edema.

In most instances, gross thickening of the skin could not be palpated, but histological examination did sometimes reveal a focal proliferative dermatitis.

History, symptoms, laboratory findings, and gross and microscopic lesions should enable one to differentiate mucosal disease from virus diarrhea New York, virus diarrhea Indiana, epizootic enteritis in cattle (Sweden), bovine malignant catarrh, bovine hyperkeratosis (x disease), and other diseases.*

*A monograph, "Pathology of a Mucosal Disease of Cattle," is available to any veterinarian upon request, from Dr. F. K. Ramsey, Department of Veterinary Pathology, Iowa State College, Ames.

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III. Virus Diarrhea in Cattle

W. R. PRITCHARD, D.V.M., Ph.D., and
R. G. CARLSON, D.V.M., Ph.D.

Lafayette, Indiana

Virus diarrhea is an acute or chronic contagious and infectious disease of cattle characterized by fever, nasal discharge, cough, diarrhea, dehydration, leukopenia, erosions and inflammation of the mucous membranes of the alimentary canal, and swelling of the lymph nodes.

Virus diarrhea was first recognized[1] in 1946 in New York. It has since been identified in Maine,[2] California,[3] and Indiana[4] and is believed, on the basis of clinical evidence, to occur in many other states. Minor differences in the clinical syndrome from the virus diarrhea described by Olafson have been reported in virus diarrhea as it occurs in Indiana.[5] A similar disease has been reported from Sweden.[6] Another recently recognized and widespread cattle disease, mucosal disease, closely resembles virus diarrhea clinically and pathologically.[7] There has been much speculation as to whether virus diarrhea and mucosal disease are the same or related diseases.

HOST RANGE

Under natural conditions, only cattle are known to be susceptible to this disease. Cattle of all ages can be infected either naturally or experimentally but those between 8 and 24 months old appear to be the most susceptible and develop the most marked clinical signs. Infection has been established experimentally in rabbits,[2,8] sheep,[3] and very young swine.[8] On the basis of limited observations, mice,[2,8] guinea pigs,[2,8] dogs,[2] cats,[2] goats,[2] and

From Purdue University Agricultural Experiment Station, Lafayette, Ind.

embryonating chicken eggs[2,8] appear to be relatively resistant to the infection. The causal agent has been adapted to growth in tissue cultures.[9]

Virus diarrhea is readily transmitted in cattle by contact or through the transfer of materials from infected animals or their environments. The exact means by which it is transmitted under natural conditions is unknown. Experimentally, it is readily transmitted with blood or spleen preparations obtained during the period leukopenia is present and for variable periods thereafter. Oral, intranasal, *per rectum*, subcutaneous, intramuscular, and intravenous routes of inoculation are effective in transmitting this disease.

ETIOLOGY

This disease is caused by a filterable agent that is believed to be a virus. It readily passes Berkefeld N filters and is not inactivated by penicillin and dihydrostreptomycin *in vitro*. It remains viable for years when stored at −40 C. or lower but dies quickly when stored at −20 C. The agent has been found in blood, spleen, and feces and probably occurs in all tissues, secretions, and excretions. It can readily be obtained from the blood of field animals with virus diarrhea, during the period when acute symptoms are present, and from the feces for a longer period. It has been isolated from the feces of a cow with chronic virus diarrhea in Indiana, five months after the onset of clinical signs of disease.

Under field conditions, with some variation, the incubation period is seven to ten days. Experimentally, clinical signs and leukopenia occur in two or three days, while the most marked signs of disease begin seven to nine days postinoculation.

MORBIDITY AND MORTALITY

The morbidity rate for acute virus diarrhea ranges from 80 to 100 per cent, while the mortality rate varies from 0 to 50 per cent. On the average, in Indiana, the mortality rate of acute virus diarrhea has been around 10 per cent. In chronic virus diarrhea, the morbidity rate ranges from 10 to 20 per cent and about 20 to 50 per cent of these animals die.

CLINICAL CHARACTERISTICS

Three rather distinct clinical forms of virus diarrhea are recognized in Indiana. There is an acute form that resembles so-called shipping fever, a chronic form with many of the characteristics of Johne's disease, and a mild transient form that in some respects resembles vibrionic winter dysentery. All of these forms have been reproduced experimentally and the causative agent has been isolated from naturally occurring cases of all three forms.

Acute Form.—In the acute form, the onset of clinical signs is sudden and characterized by fever, nasal discharge, cough, tachycardia, depression, lameness, and anorexia. The feces are generally hard and dark in color with specks of mucus and blood on their surface. These signs are ordinarily present for about one week and are followed by a period of about equal length during which the animals appear to be much improved, although evidence of dehydration begins during this time.

Profuse diarrhea and mild fever follow and persist for a few days to several weeks. The feces are fluid and contain quantities of mucus and some blood, and animals lose weight and become markedly dehydrated during this period. Erosions of the oral mucosa, muzzle, or vulva occur in 10 to 50 per cent of the animals either during the febrile stage or at the onset of diarrhea. The course of this form is 2 to 6 weeks. Some of the animals that appear to recover later develop signs of chronic virus diarrhea.

Lameness that appears to be caused by laminitis occurs in virus diarrhea in Indiana. Abortions occur subsequent to infection with virus diarrhea-New York, but have not been observed in Indiana.

Chronic Form.—The chronic form of virus diarrhea occurs both in herds that have experienced an acute episode and where there is no history of previous illness. It is possible that a mild transient form of virus diarrhea has preceded the chronic form in the latter herds.

The onset is insidious and poorly defined. Affected animals fail to grow normally, some lose weight, become emaciated, and develop either continuous or intermittent diarrhea. No other signs of disease are observed. The course varies from two to five months.

Mild Form.—The mild form has been the predominant form of virus diarrhea encountered in Indiana during the last year. Affected animals have slight nasal discharges, mild fever, leukopenia and,

later, develop diarrhea which may persist for a few days. Rarely do mouth lesions occur or do animals become seriously affected. This mild transient form has been seen in many calves shortly after they were handled in public stockyards and salesbarns in central Indiana.

HEMATOLOGY AND PATHOLOGY

The significant hematological changes observed in virus diarrhea are leukopenia, which occurs early in the course of infection and prior to the febrile period; a relative lymphocytosis, which generally occurs following the febrile period; and a decrease in the hematocrit, which begins at the onset of leukopenia and continues until near the time diarrhea ceases.

The chief pathological changes occur in the mucous membranes of the alimentary canal and in the lymphatic tissue.[10] Lesions of the alimentary canal consist of erosions, ulcerations, hemorrhages, congestion, and edema of the mucosa. The most marked changes are found in the oral cavity, esophagus, abomasum, gallbladder, small intestine, and rectum. Edema and exhaustion of germinal centers occur in the lymphatic tissue. Grossly, the lymph nodes and Peyer's patches may be enlarged two to four times by the edema.

IMMUNITY

Infection with virus diarrhea results in immunity to subsequent infection with the same agent. Work in our laboratory has indicated that immunity to homologous challenge with virus diarrhea-Indiana is short-lived and probably does not exceed four to five months.[11] Recurrences after four to five months have been observed in this disease under natural conditions.

There is evidence that there are several immunological types of virus diarrhea-Indiana. Results of cross-protection tests have indicated that there may be immunological differences between virus diarrhea-New York and virus diarrhea-Indiana.

No serological test has been devised or reported for virus diarrhea.

DIAGNOSIS

A diagnosis can ordinarily be made on the basis of clinical and pathological findings. The only procedure presently available to confirm a diagnosis is the cross-protection test.

CONTROL

No treatment procedure has been found that will alter the natural course of virus diarrhea in the infected animal. The only known successful means of controlling this infection depends upon segregation of infected animals.

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Hereditary Defects in Cattle

Three cases of a skin defect, "epitheliogenesis imperfecta," in the forelegs of calves occurred in two herds of Swedish red and white cattle. The only skin was a ring about 1 cm. wide just above the hoof. All of the limbs of 1 calf were contracted. Two of the calves were born alive but died in two days. The same bull was both the paternal and maternal grandsire of all the calves, indicating that the defect was caused by a recessive lethal gene.—*Nord. Vet.-med., Dec. 1956.*

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Three recent cases of "acroteriasis congenita" are reported in Swedish Friesian cattle. The defects are: short face, hydrocephalus, and extremities terminating at the carpal and tarsal joints. They were the result of intensive inbreeding (in 1 case, a dam mated to a son), and the ancestry of all traced to the first known carrier of the defect.—*Nord. Vet.-med., Dec., 1956.*

Rabies in Wildlife in Middle America

AURELIO MALAGA-ALBA, B.Sc., M.R.C.V.S.

Mexico City, Mexico

ALTHOUGH WOLVES could have brought rabies to the New World by way of Alaska, historical evidence indicates that canine rabies was introduced into the Greater Antilles from Spain during the early years of Spanish domination. It was first recognized in Barbados in 1741, Guadalupe in 1776, and the Dominican Republic and Jamaica in 1783, but the archives of the Holy Inquisition of Mexico shows that by 1709 rabies had already spread to Middle America.

This artificial division, Middle America, which includes Mexico, Central America, all the Antilles, and the coastal zones of the countries surrounding the Gulf of Mexico and the Caribbean Sea, has been chosen because the countries therein are closely linked by tourism and trade and because, from the standpoint of disease, they can be considered as forming an epidemiological unit. In this area (map 1, table 1), with the exception of Panama, Costa Rica, Jamaica, the Lesser Antilles, and the Leeward Islands, canine rabies constitutes a well-recognized urban hazard.

The existence in continental America of such gregarious carnivora as coyotes, wolves, and susceptible animals (such as foxes, squirrels, skunks, opossums, and raccoons) must have been the determining reason for the ready establishment of canine rabies as differentiated from the indigenous rabies in bats.

In the absence of adequate records, in compiling this report, we have had to rely on the information furnished by interested officials; therefore, no statistical information will be presented.

In Mexico, rabies in wolves and coyotes has been reported at times. In Chihuahua, the last authenticated case was observed, in 1938, on a ranch where coyotes attacked a human being and, also, some domestic animals. In 1951, dogs brought in by hunters from Texas were responsible for an outbreak of rabies in feral cats.[1] In 1953, the most serious rabies epizootic in coyotes in Mexico was registered in the State of Coahuila; coyotes chased shepherds in the fields and obliged them to take refuge in water tanks. At night, the animals entered three towns and attacked dogs.[2]

In Mexico, rabies has been observed in wolves, bobcats, ring-tailed cats, squirrels, and monkeys. It was diagnosed in a skunk in August, 1952—apparently the first reported case in Mexico. The spotted skunk (Spilogale sp.), often referred to in Texas as the "phoby cat," has been known to transmit rabies to man. It might have been the means of blazing a new trail of rabies into the United States.

The coyote may have migrated into Central America following the early introduction of cattle from Mexico. Although three species of coyotes are recognized, rabies has been reported only in the species *Canis latrans hondurensis*, and only in Costa Rica.

Colombia and Venezuela[3] have reported isolated cases of rabies in the fox (*Canis thous savannarum*). In May, 1956, an epizootic of fox rabies characteristically spread to cattle and dogs.

The mammalian fauna in the Caribbean Islands is limited to some 100 species of bats, a few rodents, the almost extinct Capromys (agouti) and, in the Dominican Republic, the *Solenodon paradoxus*.

The mongoose, originally introduced into Jamaica in an attempt to control rodents that were causing alarming devastation on sugar cane plantations, soon became acclimated and propagated in all the Antilles. Three pairs were released in Virgin Islands in 1867.[4] In Cuba and the Dominican Republic, outstanding departures from the normal behavior of this species have been observed; it is common folklore that the mongoose can transmit rabies to the dog.

The mongoose has been responsible for at least one death in man in Cuba (May 29, 1948). Spontaneous rabies in captive mongooses was also observed in August, 1950. The incubation period for this species was reported to be 18 to 22 days.[18] Paralysis of the legs was followed closely by furious symptoms.

In March, 1950, an investigation[5] in

Dr. Malaga-Alba is veterinary public health advisor of the Pan American Sanitary Bureau, Zone II, Mexico, and rabies consultant of the World Health Organization.

Presented before the Section on Public Health, Ninety-Third Annual Meeting, American Veterinary Medical Association, San Antonio, Texas, Oct. 15-18, 1956.

Map 1—Rabies in Middle America (zone II, Mexico). The enzootic areas are shaded. However, in this map, Jamaica is shaded in error; actually, this island is free of rabies.

Puerto Rico of the first reported mongoose rabies in the Americas revealed that all primary infected dogs had fought with mongooses and had developed clinical illness within two months. From March, 1950, to April, 1952, a total of 123 cases of rabies were confirmed by laboratory examination, including 66 cases in mongooses, 21 in dogs, and 19 in cattle.

In August, 1954, during an epidemiological survey of vampire bat rabies in Trinidad, it was learned that the provoking attitude of "mad" mongooses suggested rabies. Examination of the brain of a mongoose killed by a car in August, 1955, revealed Negri bodies.[6]

No incidence of canine rabies has been reported in Trinidad since 1912 but, in

TABLE I—Rabies in Middle America

Countries	Dogs	Wildlife	Bats	Control programs	Remarks
U. S. A.	+	+	+	Yes	Wolves, coyotes, foxes, skunks, squirrels, opossums, raccoon, bobcats
Mexico	+	+	+	Yes	Wolves, coyotes, foxes, skunks, squirrels, opossum
Guatemala	+	—	+	—	—
Belize	—	—	+	—	—
El Salvador	+	—	+	—	—
Honduras	+	—	+	—	—
Nicaragua	+	—	+	—	—
Costa Rica	+	—	+	—	Coyotes
Panama	—	—	?	—	—
Colombia	+	+	+	—	Foxes (program in organization)
Venezuela	+	+	+	—	Foxes (program in organization)
Guianas	—	—	+	—	—
Trinidad	+	+	+	Yes	Mongoose
Lesser Antilles (Aruba, Curacao)	—	—	—	—	—
Windward Islands					
Grenada	+	+	—	Yes	Mongoose
Barbados, Martinique	—	—	—	—	—
Leeward Islands					
Dominica, Guadeloupe, Antigua	—	—	—	—	—
Virgin Islands	—	—	—	—	—
Puerto Rico	+	+	—	Yes	Mongoose
Hispaniola	+	+	—	Yes	Mongoose
Jamaica	—	—	—	—	—
Cuba	+	+	—	Yes	Mongoose
Bahamas	+	—	—	—	—

1919, a clinical case of rabies was reported in a 14-year-old girl who had been bitten by a strange cat which also attacked a woman. The cat was considered mad. In March of the same year, a third person bitten by a cat died with symptoms of rabies.[7] Rabies in the cat, in the absence of rabies in the dog, is strongly suggestive of mongoose infection, especially since 1.7 per cent of the cases of rabies in Puerto Rico occurred in cats.

In Grenada, rabies infections, without conclusive evidence, were attributed to bats until a survey, August, 1955, showed the mongoose to be the rabies reservoir. Reliable witnesses reported that mongoose attacks on human beings and domestic animals occurred as long ago as 1902. Of the 12 cases of rabies recorded in 1955-1956, 6 were confirmed by laboratory diagnosis (table 2).

The cases appeared in sporadically scattered rural areas and no common source of contact could be traced. Since 5 of the animals had been attacked by mongooses, this animal was incriminated. Unfortunately, hurricane "Janet," which played havoc with the Island in 1955, prevented the implementation of measures to control the infection and, soon thereafter, cases of canine rabies were reported in St. Mark and St. John.

TABLE 2—Rabies Reported in Grenada, 1955-1956

Animal	No.	Laboratory diagnosis	Attacked by mongoose
Cattle	6	4	2
Dogs	4	1	3
Swine	1	–	–
Mongoose	1	1	–
Totals	12	6	5

Although the hurricane devastated the forests, the mongooses apparently suffered no ill effects. They moved in great numbers into the gardens and open areas where they fed on sweet potatoes, cucumbers, and other crops. In Mount Nesbit, during a three-week period, 45 were caught in only four traps. In this area, and along the beach, the infestation was estimated at 8 mongooses per acre.

In April, when rabies was diagnosed in a mongoose that had bitten a young woman, plans for the selective poisoning of this species was made. "Jacks" (small dry sardines), treated with 30 mg. of thallium sulfate, were scattered at intervals of 500 ft. along the hedges and other natural paths of the mongoose. An estimated 10,000 mongooses were killed at a total cost of $500. In March, 1956, a program for the eradication of rabies was inaugurated in Grenada. Some 5,300 dogs (75.5% of the dog population) were inoculated with avianized rabies vaccine in a house-to-house program that included the urban and rural areas.

Although no rabies cases have been reported since (late, 1956), it is still too early to ascertain whether it has been completely eliminated.[8]

DISCUSSION

Rabies in the mongoose in five widely separated islands (Cuba, Puerto Rico, La Hispaniola, Grenada, and Trinidad) not only presents a persistent obstacle to the eradication of the disease but warns of the hazard of the large mongoose populations in islands still free of rabies.

Vampire bat rabies undoubtedly is the greatest wildlife problem confronting the veterinarian and the livestock owner. Bats and dogs are perhaps the only major rabies hosts common to all continents. The genus Myotis, which is universally distributed throughout the northern hemisphere, may be responsible for the spread of rabies throughout the world. This is only a conjecture. However, bat rabies, chiefly caused by vampire bats, has the widest geographical range in the Americas.

It is estimated that at least 100,000 cattle die each year of rabies in tropical America. Before Mexico resorted to the mass immunization of cattle, their yearly loss was more than 50,000 cattle. A recent survey in the northeastern part of Colombia indicates an annual loss of 10,000 cattle from vampire bat rabies, which was confirmed by laboratory tests for the first time in that country.[9] In Venezuela, it has caused serious losses during the past two years. Because of similar situations, British, Dutch, and French Guiana have resorted to immunization of their livestock. Epidemiologically speaking, Trinidad can be considered within the enzootic area of the Orinoco River (Venezuela), as it has been possible to link successive or simultaneous epizootics in the two countries; vampire bats can easily cross the Columbus Channel.[10] In Trinidad, in August 1955, Negri bodies were found in the brain of a *Diaemus youngi* (the white spotted

vampire bat). Still more surprising was the finding of the large buccal glands which, when the bat is excited, protrude from the commissures of the open mouth like two red peas. These glands apparently have a defensive or attacking function, as they emit a powerful scent, a unique characteristic of this species.[11]

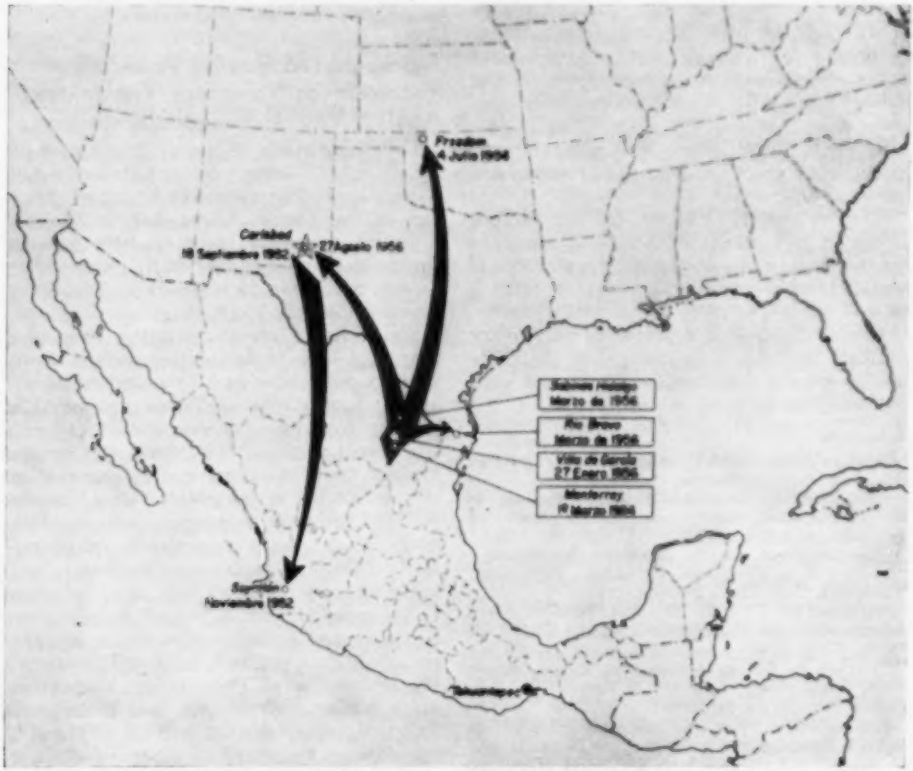
In the United States, the discovery of rabies in 14 different species of insectivorous bats in 13 widely separated states, extends the problem to the entire continent and revolutionizes the concept of the disease to the extent that we no longer speak of "vampire" bat rabies, but "bat" rabies. It seems that we are confronting a virus especially adapted to bats[12,13] and that we are seeing the disease, perhaps for the first time, in an old but well-established host.

The isolation of rabies virus from the brains and salivary glands, and the finding of neutralizing antibodies in 16 per cent and 61 per cent, respectively, of specimens of *Tadarida brasilensis mexicana*,[14] initiated an intensive study of this common guano bat.

In Mexico, guano bats are numerous during the winter but gradually disappear in summer, leading to the belief that they migrate to the southern United States.

On Nov. 26, 1952, a female, banded on Sept. 18, 1956, in New Mexico, was recaptured more than 800 miles away (map 2). Since then, many other migratory data have been compiled.[16]

The findings confirmed the observation that Tadarida migrates to Mexico, at the approach of winter, where mating probably occurs. In early spring, the pregnant females and the adult males return to their original roosts, leaving behind small residual colonies of immature bats, mostly males. Tadarida often roost with bats of different species but they are never seen



Map 2—Route of migration of Tadarida brasilensis mexicana.

roosting in the same caves with hematophagus bats. Bats often fight among themselves and other species, especially at roosting time and during the mating season, thus readily spreading infection. Tadarida is a true American bat, as birth occurs in July in the warm caves as far north as Oklahoma.

In some large towns of Texas, colonies have been observed which do not migrate, probably having developed an urban habit because of warm city buildings.

Observations indicate that Tadarida and Desmodontidae bats do not roost in the same caves or have adjacent colonies. Therefore, it is believed that rabies is enzootic in Tadarida.

SUMMARY

The continental wildlife in Middle America constitutes a reservoir for the perpetuation of rabies. It has been responsible for periodic epizootics in almost all of the countries and, also, for the transmission of rabies across international borders.

The presence of mongoose rabies in five major islands of the Caribbean Sea presents a serious obstacle to eradication and a threat to those islands with a large mongoose population which, at present, are rabies free.

The migratory nature of the flights (some of 800 miles) of *Tadarida brasilensis mexicana* have a seasonal regularity associated with reproduction rather than a lack of food.

Observations over a period of four years indicate that rabies is enzootic in Tadarida and is not the result of casual contact with hematophagous bats.

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Thoroughbred Racing Association Recommends Voluntary Vaccination Against Equine Encephalomyelitis

Following study of a report compiled by Dr. M. A. Gilman, veterinarian for the American Jockey Club, the board of directors of the Thoroughbred Racing Association has approved steps to help prevent equine sleeping sickness during the racing season, according to a report in *The Blood Horse* for March 23 (p. 794).

The T.R.A.'s study committee concluded that "the only basic solution agreed on by all national bodies and by veterinarians is annual inoculation of Thoroughbreds and regular fogging of stable areas" (to control insect vectors). The committee recommended that, since mandatory vaccination is not feasible at the present time, an educational program to promote voluntary inoculation of racing animals should be carried on through appropriate mediums.

Secretaries of the T.R.A. will be urged to recommend vaccination of horses prior to shipment to tracks. Also, track management officials, officers of the Horsemen's Benevolent and Protective Association, state racing commissions, and commission and track veterinarians will all be urged to recommend voluntary vaccination of Thoroughbreds against both eastern and western type equine encephalomyelitis.

Poultry Inspection – A National Issue

OSCAR SUSSMAN, D.V.M., M.P.H., LL.B.

Princeton, New Jersey

THERE IS NO doubt as to the need for compulsory poultry inspection. Industry has indicated general agreement. The questions to be resolved are: Who should administer the program and to what extent shall inspection consist?

At recent hearings in both the Senate and the House, all consumer and health groups were in complete accord on the need for the inspection and the need for the transfer of the inspection out of the hands of the marketing and essentially sales promotion group into the hands of the consumer and health protective group.

The Association of State Public Health Veterinarians has concluded that the best place, administratively, for poultry inspection service is in the Meat Inspection Branch of the federal government. Many other groups, including the U. S. Livestock Sanitary Association and the AVMA, agree.

We feel that our main problem is the integrity of the federal stamp placed on poultry. With respect to integrity, our statements should not be construed as indicating a lack of integrity on the part of veterinarians in the Poultry Inspection Service. Unfortunately, in the Department of Agriculture, veterinarians have always been in a role subservient to nonprofessionals. This is particularly true in the poultry inspection and sanitation area. Here salesmen, graders, and marketing specialists dictate major policy decisions affecting veterinarians and procedures in the field of veterinary inspection, or lack of such inspection, for the protection of the health, safety, and assurance of Mrs. Consumer.

Three areas of events from the past illustrate why we have taken our present firm stand on this problem.

1) In 1948, the group in charge of poultry marketing services suggested providing an opportunity to industry whereby a U. S. Grade A label could be placed on an eviscerated bird "ready to cook" (all internal evidence of disease processes, if present, are effectively removed) without benefit of veterinary inspection or, for that matter, any inspection.

Regulations effectuating this were promulgated on Jan. 1, 1950, by the Department of Agriculture in spite of the solid opposition of public health groups. We quote, for your information, the Resolution of the Association of State and Territorial Health Officers adopted at their forty-seventh annual conference, Nov. 15-17, 1948, at Washington, D. C.:

> WHEREAS, the U. S. Department of Agriculture has provided an ante-mortem and post-mortem poultry inspection service to any poultry processor for the past twenty years; and
>
> WHEREAS, the USDA was also providing a grading service which classifies undrawn carcasses as to the amount of flesh, fat and finish into grades; and
>
> WHEREAS, certain groups in the poultry industry were recently requested by the USDA to consider a proposal to federally grade *uninspected* drawn poultry; and
>
> WHEREAS, the favorable consideration of such a proposal for grading uninspected eviscerated poultry would be a serious public health hazard since such grading of drawn poultry would falsely imply to the consumer that the product was sound, wholesome, and fit for food where it is conceivable that such a product officially graded by the USDA might be diseased and unfit:
>
> THEREFORE BE IT RESOLVED, that the Association of State and Territorial Health Officers express its disapproval of such a proposal which, if adopted, would practically eliminate the poultry inspection service and with it the protection of the public against the marketing and consumption of diseased and unfit poultry products; and
>
> BE IT FURTHER RESOLVED, that a copy of this resolution be directed to the Secretary of the United States Department of Agriculture.

It took public health and food and drug officials three years, a long series of conferences, and finally a lot of hot words to the Secretary of Agriculture before these misleading and deceiving regulations were changed. This was the first indication of the pressure tactics of the industry in this field and of the acquiescence of the salesmen and marketing specialists in charge of the Production and Marketing Administration.

On the record, this is the first big area

Dr. Sussman is with the New Jersey State Department of Health.

Presented at the eighty-fourth annual meeting of American Public Health Association, Nov. 14, 1956, at Atlantic City, N. J.

indicating lack of integrity and anticonsumer action on the part of the agricultural marketing group in the U. S. Department of Agriculture.

2) The second major area of lack of integrity was where the U.S.D.A.'s poultry marketing specialists conferred degrees of sanitation upon untrained workers and, in some cases, the actual owners of poultry firms being inspected for sanitation. This they did in spite of the fact that they refused to allow meat inspectors to grade meat. They stated to Honorable Frederick J. Lawton, director, Bureau of the Budget, in 1951, as follows:

> This problem has been given thorough consideration in times past and the suggested solution is considered impractical from several standpoints. The principal reason is that meat inspectors are not qualified to do meat grading. Among the minimum qualifications required of a meat grader is at least 4 years experience in the grading of meats on a wholesale basis. (The 60-day course in general food inspection and grading work used by the Army does not meet the minimum requirements for this work which we regard as essential.) Despite the aptitude of some of our meat inspectors for grading assignments, we feel that the time necessary to qualify a meat inspector for this particular work should be much more expensive than paying the travel time of a meat grader to the particular point. Even if time were taken to train a meat inspector to do meat grading, other difficulties would make this arrangement impractical. The meat-grading service requires very special and direct supervision which cannot be supplied by the Meat Inspection Division. Consequently, the meat inspector doing meat-grading work would be attempting to serve two different supervisors.*

This shows that the Department of Agriculture believes bad judgment of a grader which carries no risk to human health, merely a monetary risk, is more important than bad judgment of a sanitarian which carries a health risk.

As a contrast, in 1955, a partner of a firm eventually convicted in a federal court of handling diseased, dirty poultry had been given a card making him an official grader sanitarian of the U.S.D.A. in the State of New Jersey. This plant sold its poultry to an official poultry inspection plant which marketed the birds, canned and frozen, with a U. S. shield on the product. The agricultural marketing officials made excuses but they appointed the man's foreman as sanitarian. The foreman had no training, could not read English well and, as late as one year after he was appointed, had not seen the manual of instructions or any information as to his duties.

3) The third area of poor integrity is illustrated by a contract just recently replaced but, again, only after criticism at a recent Senate hearing. I quote myself:

> . . . the Agricultural Marketing Service is the agency which recently issued a contract in which the integrity and the security of its own inspectors were put in jeopardy.
> There should be no doubt left in anyone's mind as to the lack of proper intent and direction of the U.S.D.A. Poultry Branch of the Agricultural Marketing Service when one reads the following excerpt from the present contract for inspection, dated August 1, 1955, less than a year ago, and titled "Poultry Inspection Performed on a Resident Inspection Basis." Charges and Other Provision:
> "(8) A charge of $250 to cover the average cost of travel, per diem and movement of household goods of an inspector and his dependents whose travel headquarters is changed, when the assignment is made for the purpose of (1) installation of service, or, (2) when an additional inspector is assigned to the plant to handle increased workload: Provided, that when a transfer of an inspector from the plant is made at the request of the applicant, such applicant shall be billed the actual cost of travel, per diem, and movement of household goods involved in the transfer of both the inspector transferred from the plant and the inspector transferred to the plant: Provided, further, that no charge shall be made when the assignment of an inspector is made at the sole discretion of A.M.S."
> As the committee will note, under this part of the regulation, should a company want to have an inspector transferred and request same, and be willing to pay the cost of his transportation and the cost of the new inspector's transportation to the plant, it may achieve such result.
> An inspector under the constant hazard of being moved, not at the sole discretion of his employer, the United States Government, but at the discretion of and the ability to pay of the packinghouse operator, is no longer able to properly perform his task.
> Such an inspector must carefully weigh the results of what may happen to him and his family should he incur the wrath of one of the larger packing concerns more able to pay for his transfer.†

The U.S.D.A. and industry apologists state, in this connection, "But poultry inspection is voluntary." However, in the field of voluntary dog food inspection paid for by industry under the same legislative Agricultural Marketing Act, but administered by the Meat Inspection Branch, no

*Compulsory Inspection of Poultry and Poultry Products. Hearings before a Subcommittee of the Committee on Agriculture and Forestry, United States Senate, 84th Congress, on S. 3588 and S. 3983, June 18, 19, and 26, 1956, p. 135.

†Compulsory Inspection of Poultry and Poultry Products. Hearings before a Subcommittee of the Committee on Agriculture and Forestry, United States Senate—84th Congress, on S.3588 and S.3983, June 18, 19, 26, 1956, pp. 81-82.

veterinarian was ever placed in jeopardy of being moved other than at the sole discretion of the chief veterinarian.

The following quotation from Senate hearings, is a discussion between Mr. Earl L. Butz, assistant secretary of agriculture, and Mr. William Reidy of the professional staff of the Senate Subcommittee on Legislation Affecting the Food and Drug Administration:

> Mr. Reidy: Now, let me ask you, you are having a voluntary inspection of dog meat. Do the agreements made with the processors of dog food have any such provisions as the one in poultry, that invites the dog-meat processor to call you up and say, "I would like to get this inspector out of here and I am willing to pay his transportation?
>
> Mr. Butz: I am not familiar with their regulations.
>
> Mr. Reidy: Would you advise us as to whether there is any such provision in the contract made with dog-food processors?
>
> Mr. Butz: We can insert that in the record and we would like to look into this point that you have raised here.
>
> (The information requested is as follows:)
>
> The Agricultural Research Service advised that there is no provision in inspection contracts made with dog-food processors that invites the dog-meat processors to call up and say: "I would like to get this inspector out of here and I am willing to pay his transportation."
>
> Mr. Reidy: We would appreciate that.**
>
> It must be noted—directly after the Senate Hearings, this contract was rescinded.

It should be pointed out that when the interstate movement of poultry is cleared up, the purely local intrastate problems of poultry and meat inspection will be resolved. We feel public health officials and consumers of poultry must unite to tell Congress next session that it is not industry's right, prerogative, or privilege to write its own ticket as to how, when, and by whom it shall be inspected; that there is prior lack of faith and integrity in marketing officials; and, therefore, since industry also agrees that poultry inspection is for the public health, then Congress should listen more closely to public health and professional veterinarians representing the interests of the consumer.

**Mandatory Poultry Inspection. Hearings Before the Subcommittee on Legislation Affecting the Food and Drug Administration of the Committee on Labor and Public Welfare, United States Senate—84th Congress, on S.3176, May 9-10, 1956, p. 42.

Ever Hear of a Holstein Horse?—The first Holstein horse ever brought to the United States for breeding purposes recently arrived by boat from Germany, according to a press release. This breed is said to have an enviable record in jumping competition. Two Holstein horses were previously owned in the United States.

Endocrine Factors and Milk Secretion.—After parturition, the secretion of milk from cows increases for one to two months, then usually declines gradually, the persistency being primarily dependent on the rate of secretion of certain hormones. When dairy heifers were induced to secrete milk experimentally and were allowed to reach their maximum production without further stimulation, each was treated with three hormones, in separate periods, when the milk yield began to decline. With the daily feeding of 10 mg. of diethylstilbestrol for four weeks, the decline in milk yield was arrested and, in some animals, was slightly increased. Two cows in late normal lactation maintained their level of production for nine to ten weeks while this hormone was fed.

When L-thyroxine was injected (0.4 mg./100 lb. of body weight) for four to nine weeks, some heifers produced markedly more milk, others showed little or no effect. When thyroxine injections were suddenly stopped, the milk yield declined rapidly for about two weeks, then increased to the level which might have been expected at that stage of lactation.

When 50 mg. of growth hormone was injected daily for a week, 5 of 8 heifers had a marked increase in milk yield for periods of two to eight weeks; 3 cows showed no response.—*J. Dai Sci. (Jan., 1957):37-49.*

Duplication in Antibiotics.—In 1946, *grisein* was produced by a strain of *Streptomyces griseus* from peat from Israel. In 1951, *albomycin* was isolated from a culture of Streptomyces called *Actinomyces subtropicus*. Exhaustive tests indicate that they are chemically similar and identical with respect to antimicrobial activity. The creation of an international antibiotics board to avoid such confusion is urged.—*S. A. Waksman in Science (March 29, 1957): 585.*

A fierce Norway rat has been tamed by damaging a small, supposedly nonessential part of the brain.—*Sci. News Letter, Feb. 2, 1957.*

Responsibilities of the State in the Control of Zoonotic Diseases

ERNEST J. WITTE, V.M.D., M.P.H.

Harrisburg, Pennsylvania

THE RESPONSIBILITY usually assumed by a state in the control of zoonoses is largely determined by the extent of known disease problems resulting from these infections in that state. The seriousness of the problems will be determined by the size of the human and animal populations, by geographic and environmental factors, and by problems of specific industries. Ultimately, program development is based on the reported prevalence of the zoonotic diseases.

ANIMAL MORBIDITY REPORTING SYSTEMS

An adequate reporting system for zoonoses is a prerequisite to programs for the prevention and control of these diseases and their ultimate elimination as public health problems. It is the responsibility of each state to collect animal morbidity and mortality statistics which indicate the incidence and epidemiological significance of specific zoonoses, seasonal variations, endemic levels, and locations of the infections. Such statistics also should suggest horizons for new investigations and measure the effectiveness of control measures. Success of such a reporting system can only be assured by the close cooperation of health departments, livestock agencies, and veterinarians in the field.

EPIDEMIOLOGICAL INVESTIGATIONS AND SURVEYS

Animal disease reporting systems do not supply a complete picture of the prevalence of zoonoses. The cooperation of veterinarians in the field in reporting diseases rarely approaches 100 per cent. We find that they are more apt to report some diseases, such as rabies, more consistently than others of a less dramatic nature. Also, for many illnesses of animals, veterinarians are never called.

Deficiencies of reporting systems can be supplemented to some degree by adequate epidemiological investigations and by surveys of the animal and human populations. When zoonoses are involved, the public health veterinarian is usually assigned the task of determining the source of the infection, since his training in preventive medicine and his knowledge of public health practice qualifies him to work with physicians and other public health workers, as well as with animal owners.

The concept of a team approach to disease problems has proved to be advantageous. The team usually consists of a physician, nurse, veterinarian, sanitarian and, sometimes, an engineer. Data collected by such investigators often reveal disease reservoirs and distribution which might otherwise remain obscure. Whenever possible, investigations should be conducted by personnel as close to the local level as possible since they are most familiar with involved communities and their disease problems. State agencies should supply training opportunities for personnel at lower levels to enable them to cope with these problems.

LABORATORY FACILITIES

Another state responsibility is to provide laboratory facilities for both routine diagnostic and survey work. Such a laboratory should be able to isolate and identify infective agents of all the zoonoses whether caused by bacteria, viruses, fungi, protozoa, or rickettsia and should conduct related serological tests. If such services are not available, the state should maintain a working relationship with laboratories of teaching institutions or with laboratories of the Public Health Service. Survey work on a population group can serve to establish the degree of contact that the group has had with a specific zoonosis. This will provide a base line for determining the risk in selected groups subject to greater exposure. Survey techniques are also of value in learning more about infection reservoirs in mammals, birds, and arthropods. Laboratory facilities of agricultural and wildlife agencies should be utilized in this work. Many of our current epidemiological problems are concerned with discovering the chain of transmission

Dr. Witte is chief, Veterinary Public Health Section, Pennsylvania Department of Health, Harrisburg.

Presented before the Section on Public Health, Ninety-Third Annual Meeting, American Veterinary Medical Association, San Antonio, Texas, Oct. 15-18, 1956.

of disease agents among animal species, as well as discovering infection reservoirs.

PUBLIC HEALTH EDUCATION

The zoonoses may constitute a major cause of acute or chronic illness in individuals and specific occupation groups, or even in entire communities. These diseases in livestock may also have an adverse effect on food production for man. It becomes mandatory, then, to control and suppress reservoirs of infection and vectors of disease dissemination and to supervise the processing of animal food products. We have already indicated that before an effective program can be designed and executed, statistical and epidemiological information must be collected in a well-organized morbidity-reporting program. Another factor necessary to insure the success of any disease control program is public support. This can best be obtained through education. Since the public health veterinarian is familiar with these infections, the diseases they produce in man, and with the objectives of agricultural agencies in controlling livestock diseases, he is in a position to contribute to the development of an effective health education program.

We must also exhibit courage and vision in extending our education and our programs. Timidity is often exhibited in approaching industries where a specific zoonosis presents a unique hazard to plant workers. As a consequence, the entire situation is avoided. Yet, when officials of these industries are approached, the problems and objectives clearly explained, they are eager to cooperate to eliminate the disease problem.

VETERINARY PUBLIC HEALTH PROGRAMS

The principal functions of the public health veterinarian are (1) the provision of technical and consultative services to the health department on preventive medicine, food hygiene, legislation, and health education relating to zoonoses; (2) participation in the development of appropriate methods to prevent the occurrence and transmission of those diseases common to man and animals; (3) the development of food hygiene programs in collaboration with other specialized personnel; (4) disease investigation in collaboration with epidemiologists, nurses, engineers, and others; (5) the stimulation of and participation in research programs; (6) public health education; and (7) interagency liaison between the health department and agricultural agencies, wildlife conservation, and food and drug control.

The value of a veterinary public health program in the control of zoonoses at the state level has been demonstrated. Although over 80 zoonoses are known to occur in the world, only about one third are found in the United States. These include anthrax, bovine tuberculosis, brucellosis, leptospirosis, psittacosis, Q fever, rabies, Rocky Mountain spotted fever, salmonellosis, trichinosis, and tularemia.

Rabies is a national problem and it is, therefore, the responsibility of each state to develop its own control program based on these well-established measures: stray dog control, mass canine immunization, reduction of wildlife reservoirs when indicated, and public education and support. The state should supply the necessary specialists to assist local communities in developing such programs. The state should also be prepared to supply canine vaccine under emergency conditions and to supply vaccine and anti-rabies hyperimmune serum to exposed persons.

The reduction of bovine tuberculosis is an example of what veterinary medicine can contribute both to public health and to the economy of the country. Since the elimination of brucellosis as a disease in man is dependent on its eradication in animals, full support must be given by state agencies toward its eventual eradication.

Leptospirosis and Q fever are challenging to the veterinary profession and to the public health veterinarian in particular. Leptospirosis produces a clinical disease in affected animals and is, therefore, an economic as well as a public health problem. Since Q fever produces no obvious illness in animals, there is a tendency to ignore it. The incidence is at least ten times higher in people who consume raw milk than in those who consume pasteurized milk; it is also higher in dairy workers, in people living close to dairy farms, and in those who handle raw wool, goat hair, and sheep products, as well as in slaughterhouse workers. Immunization of exposed individuals would help to control the disease; vaccination of animals to eliminate the infection reservoirs has its economic complications. Leptospirosis and Q fever are two diseases that are pleading for epidemiological in-

vestigations, survey work, and diagnostic facilities. It is the state's responsibility to supply them. As long as these diseases occur in man, it is the moral obligation of the veterinary profession and of the state to take whatever measures necessary to control them.

A food hygiene program at the state level should have as its primary objective the prevention of disease to man through food products. Problems directly relating to food losses and the prevention of disease transmission through food by-products to other animals can be interpreted as the responsibilities of food and agricultural authorities. However, the administrative pattern varies in different localities and the important thing is to have effective health protective services. Milk sanitation should begin with the cow on the farm and meat sanitation with the animal as it enters the slaughterhouse and not terminate until the food product is in the consumer's possession. Milk and meat inspection systems have aided in diminishing the incidence of scarlet fever, diphtheria, typhoid, streptococcic sore throat, bovine tuberculosis, brucellosis, tularemia, salmonellosis, and anthrax. It is the state's responsibility to see that all milk, meat, and poultry consumed in the state is under an efficient inspection and control system.

STATE RESPONSIBILITY TO THE FEDERAL GOVERNMENT

The state has the responsibility of submitting current statistics on morbidity and mortality to the federal government, so that the national disease picture is known at all times. This is important in our present era of protracted world crises when we must think in terms of defense against biological, radiological, and chemical warfare. The state is also obliged to make known to its subdivisions the various services and programs offered by national agencies to the state and to maintain a free flow of information on new developments in disease control to local jurisdictions.

THE FUTURE

Population dynamics result in a constantly changing group. Farm populations are diminishing and urban populations are increasing. The growth in new suburban areas has resulted in an increase in the dog population which greatly exceeds all previous estimates of dogs per family. We must be prepared to cope with new manifestations of disease problems.

Erysipelatous Endocarditis in Man

Erysipelothrix rhusiopathiae infection in man may cause erysipeloid (local infection), septicemia with arthritis, and endocarditis. Infection, often traced to the handling of dead animal matter, is common among swine abattoir workers and fishermen. (In Pisces and mollusks, the organism seems to be entirely saprophytic.) The primary infection, usually on the hands, most often causes a slowly progressive, sharply defined, slightly elevated, dark, almost livid red zone. It can be differentiated from most local infections by the absence of lymphangitis and lymphadenitis, and its termination without desquamation or suppuration. Blood stream infection, resulting in arthritis or endocarditis, is rare in man. A few cases of vegetative endocarditis due to this infection have been described. The following is the first acute case in which the patient is believed to have benefited from treatment.

A man who had injured a finger two weeks previously, while working with soil from a hoglot, developed a local swelling with raised edges and a central necrotic area. For several days, he had been ill with severe muscle pains and a temperature up to 104 F. He had developed a heart murmur and blood cultures were positive for *Ery. rhusiopathiae*. Scattered over his body were slightly elevated, sharply defined lesions from 0.5 to 5.0 cm. in diameter. They were dark violet, usually with a paler center. The skin lesions were mildly tender at first but there was no itching. After daily treatment with 12 million units of penicillin and 1 Gm. of streptomycin, the temperature subsided in three days and the skin lesions in seven days. Blood cultures were positive the first four days, then remained negative. When the patient was discharged, after five weeks of therapy, heart murmurs were still harsh but were gradually receding. One year later, murmurs were still present but there were no cardiac complaints.—*New England J. Med., Dec. 13, 1956.*

The First Half Century of Animal Disease Reporting in America

J. F. SMITHCORS, D.V.M., Ph.D.

East Lansing, Michigan

THE DOMESTIC animals brought to America by the colonists enjoyed a respite of considerable length from the ravages of disease that had plagued the livestock of Europe for centuries. Hogs, brought to Virginia in 1609, were so plentiful by 1627 that it was necessary to palisade the settlement of Jamestown to prevent the town from being overrun by them. Other species also benefited from the temporary immunity afforded by the relatively disease-free environment, for there were no domestic animals native to America.

This deceptive immunity lasted for perhaps a century, although sporadic losses in scattered settlements undoubtedly were major catastrophes for the local populace. The losses may have been greater than realized since they probably were not recorded unless notices reached local newspapers. Not until about the mid-eighteenth century are there many responsible records of major epizootics. The recorded occurrence of epizootic disease in all species and from all parts of the country from this time on would suggest, however, that losses from disease had been occurring for some time.

EARLY REPORTING MEDIUMS

Since colonial America lacked a regular medium for the reporting of animal disease, only a meager store of information has been left on its day-to-day occurrence. With the publication of the *American Farmer* in 1819, and the numerous agricultural journals which followed it, animal disease began to be reported with an increasing tempo. By 1850, when more such journals were published in America than in the rest of the world, nearly every publication had a regular veterinary department. Some were in the nature of a subscribers' exchange but a number were headed by responsible veterinary practitioners. Until the publication of the *American Veterinary Review* in 1877, these agricultural journals were the principal, if not the sole, medium for the reporting of animal disease, other than the publications of the Department of Agriculture.

This report is based on a review of some 4,000 references from the leading agricultural journals from 1820 to 1870.* The principal journals abstracted were *American Farmer, Prairie Farmer, Country Gentleman, American Agriculturalist*, and *Western Rural*. While statistical accuracy can not be claimed, it would seem reasonable to believe that these references constitute a good cross section of the animal disease situation in the northeastern, mid-Atlantic, and middle western states.

FIRST DISEASES REPORTED

The references were filed under about 120 topics, ranging from "abortion" to "yellow water." Some entries, such as the above, are quite specific; others are relatively nonspecific, e.g., "cattle diseases, unclassified." An effort was made to avoid filling the "miscellaneous" slot but this seemed most appropriate for such items as "a pig with a wooden leg" and "a rattling" in a horse. (In the latter case, the inquirer was advised to trade his horse for a mare.) The number of items under each topic, of course, is not necessarily an indication of the number of animals affected, nor of the economic consequences; 12 outbreaks of anthrax would be of greater significance than 100 cases of colic. The figures which follow, therefore, are merely an indication of the nature of problems which individuals thought worth writing about. No attempt has been made to determine a regional or a temporal distribution of cases, but a subjective analysis of the file indicates that the figures are fairly representative of the first half century of animal disease reporting.

The ten most commonly reported specific disease entities, in terms of the number of case reports, account for nearly 25 per cent of the total number of references. In first

From the Department of Anatomy, College of Veterinary Medicine, Michigan State University, East Lansing.

*References were gathered over a two-year period by students at Michigan State University in work on the history of veterinary medicine, and I am indebted to them individually and collectively.

place, by a substantial margin, is mastitis, more commonly denominated as "garget." Following in order are hog cholera, gapeworms in hens, Texas fever, abortion in cattle, bloat in cattle, horse colic, horse bots, cattle scours, and sheep scab.

Perhaps of greater significance is the fact that about 75 per cent of the entries can be placed in five major groupings: (1) The great animal plagues—hog cholera, Texas fever, pleuropneumonia, and foot-and-mouth disease—account for about 16 per cent of the total; (2) another 16 per cent is devoted to parasites—bots, gapeworms, mange and scab, intestinal and lungworms, and trichinosis; (3) diseases of the digestive organs—principally bloat, colic, and scours, together with general disorders related to feeding—account for about 14 per cent of the total; (4) reproductive diseases and related problems—abortion, milk fever, difficult parturition, and multiple births and monstrosities—amount to about 13 per cent; (5) another 13 per cent is devoted to the numerous problems related to the limbs and feet of the horse and to foot rot in cattle and sheep. This 75 per cent of the total cases is divided into about 50 fairly specific entities. The remaining 25 per cent is divided into about 70 entities, a substantial number of them being relatively nonspecific.

DISEASES THEN AND NOW

While it would be difficult to arrive at a valid comparison of the incidence of disease then and now, certain facts are obvious and other trends are apparent. Without doubt, the major accomplishment since 1870 has been the eradication or control of the major animal plagues, with the result that the major problem of this early period has been relegated to one of minor importance, as far as the actual incidence of disease is concerned. Likewise, with the decrease in the horse population and a fuller appreciation of the nature of foot rot on the part of farmers, the fifth category above, that relating to the limbs and feet, has assumed a role of lesser importance. On the other hand, the other three major categories, parasitism, digestive diseases, and reproductive problems, are undoubtedly of equal or greater importance in relation to the total picture today.

An item of some interest is that the sixth major grouping of disease problems during this first half century relates to poultry. Including parasites, these references account for a little over 10 per cent of the total, gapeworms alone being third in the listing of individual disease entities. Of further significance is the fact that five of the ten most common disease entities relate to cattle, one to hogs, and one to sheep. Thus, only two relate to the horse and these are well down the list. In only one of the major groupings, that relating to the limbs, does a majority of the references pertain to the horse. Whether the increased emphasis upon the horse by veterinarians during the next half century was based upon premises more apparent than real is a matter for conjecture. It is evident, however, that, in spite of the relative importance of the horse during the half century under consideration, farmers apparently were not preoccupied with diseases of the horse.

This information, of course, was available but was evidently unheeded in the 1870's and later when attention was being given to the establishment of a veterinary profession. While it would serve no useful purpose to suggest what "might have been," these data might be used to fortify an argument for an increasing program of animal disease reporting, and the use of such statistics to determine what problems might require greater attention.

Strychnine Poisoning in Man.—In the treatment of strychnine poisoning, as in tetanus, complete control of the convulsion, using a general anesthetic and a muscle relaxant, is required. A considerable quantity of strychnine may be removed by aspirating the stomach an hour or more after ingestion. Convulsions have reappeared more than 48 hours after the initial treatment in some cases, the poison apparently having been released into the blood stream by the liver.—*Brit. Med. J., Nov. 10, 1956.*

Pathogenesis of Toxoplasmosis.—More nonclinical than clinical cases of toxoplasmosis occur; hence lesions and disease represent an atypical reaction. The lesions are centered in the central nervous system. Their reactivation may follow the waning of immunity or the administration of anti-inflammatory corticoids.—*Ann. N.Y. Acad. Sci., July 5, 1956.*

Surgery and Obstetrics
and Problems of Breeding

Repair of Distal Epiphyseal Fractures in Growing Dogs with the Jonas Splint

SALO JONAS, Dr. Sc. Nat., D.V.M., and ALBERT M. JONAS, D.V.M.

New Haven, Connecticut

THIS PAPER will describe a surgical procedure for repairing fractures near the epiphysis of long bones in dogs with the Jonas medullary extension splint, and will show the compatability of the splint with living tissue and its noninterference with the normal growth of bone in young animals.

Fractures at or near the epiphysis are generally difficult to set successfully, even in adult patients. Scudder[1] writes: "The prognosis in epiphyseal line fractures [in man] should be guarded. Epiphyseal line fractures result in slight delay in growth in many instances and in a few cases result in sufficient retardation to be of clinical importance." It was considered[2] that the Jonas splint might have an application in such cases because its spring mechanism would provide firm anchorage at both ends of the fractured bone while permitting an automatic extension of the pin within the bone as the growing bone increased in length. All parts of the splint, including the spring inside the sleeve, are made of austenitic low carbon stainless steel to prevent electrolytic reaction.

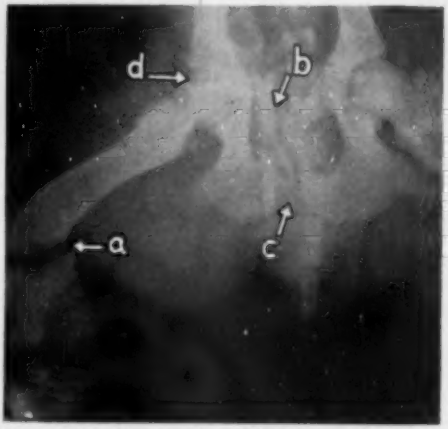

Fig. 1—Ventrodorsad radiograph of a 4-month-old pup showing (a) a distal epiphyseal oblique fracture of the right femur, (b) fracture of the right pubis, (c) ischium, and (d) the epiphyseal separation of the articular cartilage of the femoral head.

CASE REPORTS

Case 1.—On May 21, 1955, a male mixed Terrier pup, 4 months old, was found to have a fracture of the right pubis and ischium, two fractures of the right femur, an oblique fracture just proximal to the distal epiphysis, and an epiphyseal separation of the articular cartilage of the femoral head (fig. 1). An incision was made through the skin and tensor fascia lata, extending from the distal fracture of the femur down to the stifle joint. The vastus lateralis was separated from the biceps femoris by blunt dissection and the fragments were exposed. A splint, ¾ inch longer than the medullary canal of the femur, was selected to insure strong anchorage into the short fragment and to allow for the gradual extension of the splint within the growing bone.

The proximal fragment was reamed out

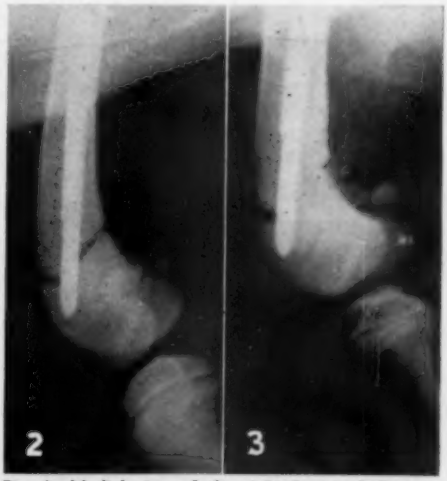

Fig. 2—Medial view of the right femur of the pup taken immediately after reduction, showing alignment of the fracture with the sleeve and most of the pin in the proximal fragment; the tip of the pin is anchored in the distal epiphysis.

Fig. 3—Same view as figure 2, 15 days after reduction, showing beginning of callus formation posteriorly. The pin is unchanged in position but is slightly increased in length.

From the Jonas Veterinary Clinic, New Haven, Conn.

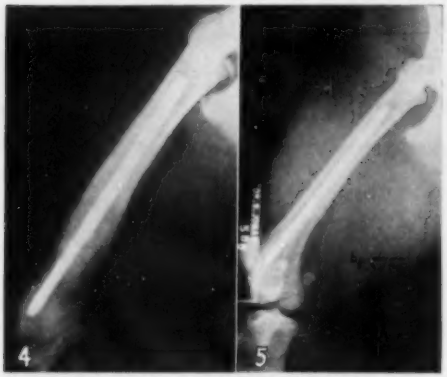

Fig. 4—Medial view of the right femur of the pup (case 1) 55 days after reduction. The pin is still anchored in the epiphysis. Additional growth of bone has allowed full extension of pin from sleeve. Repair of fracture is nearly completed.

Fig. 5—Same view as figure 4, nine and one half months after reduction. Growth of the femur is completed and the pin is fully extended. Elongation of the femur can be measured by using extension of pin as a marker.

sufficiently to hold the sleeve and a portion of the pin, and the distal end was drilled to a depth of only ¼ inch so that it would not penetrate the articular surface. The assembled unit, M-2 size, was inserted into the canal with the cotter pin in place and the fragments brought into apposition. When the cotter pin was withdrawn, the spring automatically projected the pin into the shorter fragment and, at the same time, pushed the sleeve deeper into the longer fragment. The wound was then sutured and a Thomas splint was applied for four days. Antibiotics and supplementary calcium and vitamins were administered. Eight days after reduction, the dog was walking with only a slight limp.

Fig. 6—Ventrodorsad radiograph of the 4-month-old pup 18 months after the fracture was reduced. The length of the femurs is identical. Compare length of pin protruding from sleeve with previous radiographs.

Radiographs, taken at intervals after the reduction, show the good alignment and healing which resulted. The proximal fragment accommodated the full length of the sleeve. At first (fig. 2), about one half

Fig. 7—Ventrodorsad radiograph showing an oblique distal epiphyseal fracture of the right femur in a 3-month-old pup (case 2). Note the injured tail.

Fig. 8—Medial view of the pup (case 2) taken immediately after the fracture was reduced. Note the thin cortex over the nose of the pin in the distal epiphysis.

Fig. 9—Same view as figure 8, 25 days after reduction, showing an additional fracture (arrow) and good callus formation. Note extension in length of pin.

of the portion of the pin which protruded was anchored in the distal epiphysis. Fifteen days after the operation (fig. 3), there was a slight extension of the pin and the beginning of callus formation at the posterior aspect of the fracture. Another radiograph, taken 24 days after reduction, showed an abundant, normal proliferation of osteogenic tissue with a healthy callus. At this stage, the dog walked and jumped with only a trace of lameness. Fifty-five days after the operation (fig. 4), growth of the bone had allowed the pin to become fully extended from the sleeve.

By March 3, 1956, nine and one half months after the operation, the fracture was well healed and the splint was still anchored firmly (fig. 5). The portion of the pin outside of the sleeve had increased with the growth of the bone. Not only had the pin expanded to its full length, but the distal epiphysis seemed to have exerted a strong pull on the pin, causing an overextension of the splint. However, there was ample reserve pin within the sleeve. On Nov. 9, 1956, 18 months after the operation, a radiograph (fig. 6), taken in a ventrodorsad position as was figure 1, shows no difference in length between the fractured and normal femurs, indicating that the splint had not interfered with the normal growth of the bone.

Case 2.—On May 14, 1956, a male mixed Collie pup, 3 months old, was found to have an oblique fracture near the distal epiphysis of the right femur (fig. 7) similar to that of the Terrier (case 1). There were no pelvic injuries, but the tail was partially severed and there was a long laceration extending from the stifle down to the hock. The surgical procedure for reduction of this fracture and implantation of the splint was the same as in case 1. A Thomas splint was also applied for four days. The splint, size S-3, was about ¾ inch longer than the medullary canal of the femur. A radiograph taken immediately after reduction (fig. 8) shows the sleeve and about one half of the extended portion of the pin in the proximal fragment and the other half in the distal fragment. After 11 days of hospitalization, the pup was allowed to run as it wished. When next examined, 25 days after the operation (fig. 9), the shaft showed an additional fracture but the pin and all fragments were in proper position and a good callus formation was evident. By August 4, 82 days after reduction, the bones were fused solidly (fig. 10) and no fracture lines could be detected. The femur had grown considerably and the splint, which remained anchored in both ends of the bone, had adjusted automatically, thus giving continuous support and immobilization.

Fig. 10—Medial view of the pup (case 2) 82 days after reduction. The fracture is repaired with a homogeneous callus. The femur and splint are considerably elongated but the position of the splint is unchanged, and the pin is fully extended out of the sleeve.

SUMMARY AND CONCLUSIONS

Fractures near the distal epiphysis of the femur in 2 growing dogs were successfully repaired with the Jonas medullary extension splint. The internal spring mechanism apparently caused the splint to lengthen as the growing bone lengthened, without interfering with normal growth.

These cases suggest that the extension splint might also be used in conditions such as fragilitas ossium where internal fixation is desirable over a long period of time.

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Cleavage in Unfertilized Human Ova.—Of 400 human follicular and tubal ova which had no possible contact with spermatozoa, three had undergone cleavage. One was in the two-cell stage, one in the four-cell stage, and one was a blastula comparable with that of a 4-day-old fertilized human ovum.—*Nature, Nov. 17, 1956.*

Sponge Rubber Collar for Dog's Tail

Dogs sometimes repeatedly retraumatize the distal portion of their tails to the extent that healing is almost impossible. Healing can sometimes be facilitated, as illustrated, by the use of two pieces of sponge rubber, trimmed in such a way that when coated with rubber cement and placed together over the tail they form a protective cushion. Healing, then, usually progresses rapidly.—Submitted by Donald A. Price, D.V.M., San Angelo, Texas.

Fetal Mortality in Human Cesarotomy.—Since postcesarotomy illness and mortality in women has been greatly reduced in recent decades, due to briefer trials of labor, blood transfusions, antibiotics, and improved surgical techniques, a study was made to determine why fetal mortalities had not likewise decreased. At 13 institutions, fetal mortality ranged from 4.5 to 15.6 per cent. At one hospital (569 cesarotomies in 16 years), the fetal mortality had been 8.2 per cent. After deducting congenital anomalies, nonviable babies, erythroblastotic infants, and those that died prior to labor, the corrected mortality was 2.9 per cent. The largest contributory factor was prematurity due to the difficulty of ascertaining the time for normal birth. Hypoxia, due to interference with placental circulation and the toxic state of the mother were other leading causes.—*J.Am.M.A., Dec. 1, 1956.*

Seminal Plasma Inactivates Sperm.—Rabbit sperm transferred directly from the epididymis, from an ejaculum, or from the uterus to the fallopian tube had to remain there six hours before it was capable of fertilization. This capacity was lost when sperm were treated with seminal plasma but could be recovered after a further period in the female tract.—*Nature, Feb. 2, 1957.*

Estrogen and Reproduction in Mink.—In mink, ovulation is dependent upon mating, but when females are remated after seven days, ovulation usually recurs. Thus, remating usually results in more and larger litters. In an effort to increase litter size, 100 I.U. of estrogen was given to 20 females one day before mating. The result was smaller litters, probably because the estrogenic surplus inhibited follicle growth during the postmating 36- to 48-hour interval before ovulation.—*Nord. Vet.-med., Dec., 1956.*

Bull fighters have entered a new ring. Since the "brave bulls" (those which show style, gaiety, and alertness in the arena), in Spain are superior to those in Mexico, their frozen semen may be used to inseminate cows in Mexico.—*A.I. Digest, Feb., 1957.*

A Procedure for Thyroidectomy in Sheep

L. A. GEORGE, Jr., D.V.M.; C. M. BARNES, D.V.M.; L. K. BUSTAD, D.V.M., M.S.

Richland, Washington

THIS PAPER describes a procedure for thyroidectomy in sheep, developed for the purpose of comparing the long-term physiological effects of thyroidectomy with the effects of thyroid ablation by means of the administration of radioactive iodine (I^{131}). Both methods of ablation were used on purebred Suffolk lambs, 2 to 4 months old, of both sexes.

REGIONAL ANATOMY[1]

The thyroid gland of a normal sheep which has received adequate dietary iodine consists of two elliptical lobes, each approximately 4 to 5 cm. long and 1 cm. wide. Each lobe extends from about the second to the seventh tracheal ring. The lobes and the isthmus connecting their two caudal poles are firmly attached to the ventrolateral surface of the trachea. The isthmus varies considerably in size and shape but is never completely absent. It generally appears as a fleshy band approximately 1 cm. wide, extending between the two caudal poles. The dorsal border and cranial and caudal poles of the gland are contiguous with the thymus gland and in close association with the carotid sheath and structures contained therein. The ventral portion of the lateral surface of the thyroid is covered by the sternohyoid and sternothyroid muscles, the dorsal portion by the omohyoid muscle.

The vessels associated with the gland consist of the anterior and posterior thyroid arteries and their satellite veins. The anterior thyroid artery is a large branch of the common carotid artery which curves over the anterior end of the gland, into which it sends several branches. Smaller branches of the artery supply other structures in this region. The posterior thyroid artery, a small vessel which arises from the common carotid artery at a variable distance caudal to the anterior thyroid artery, also supplies small branches to adjacent structures.

The internal parathyroid glands are located in the parenchyma of the thyroid lobes and are removed with the thyroid gland. The paired external parathyroid glands are located in the loose connective tissue adjacent to the dorsal surface of the common carotid artery and caudal to the point where the occipital artery arises from the latter vessel. They are sufficiently distant from the surgical field to minimize the possibility of damaging them.

SURGICAL PREPARATION

Twenty-four hours before surgery, food and water are restricted and the operative area is clipped and washed. General anesthesia is obtained with pentobarbital sodium,* administered intravenously, 10 mg. per kilogram of body weight. With the operating table adjusted to an angle of 20 degrees to the horizontal plane, the anesthetized animal is laid on its left side with the head at the higher level. The head and neck are then rotated from a lateral to a dorsal recumbent position, the chin directed straight forward, and the neck extended and arched slightly backward, avoiding respiratory embarrassment. The operative area is again clipped, scrubbed, disinfected with isopropyl alcohol, and is amply draped.

SURGICAL TECHNIQUE

The initial incision is in the midline, extending caudally for about 14 cm. from the cricoid cartilage. The skin flaps, including the superficial fascia, are reflected laterally by blunt dissection, exposing the paired sternothyroid, sternohyoid, and omohyoid muscles (fig. 1). These muscles and the deep layer of fascia are then separated at the midline and retracted laterally with a Volkmann retractor, exposing the thyroid gland (fig. 2). Good exposure is essential to permit unobstructed manipulation and double ligation of the major vessels.

Excision is begun by isolating the caudal thyroid vessels and ligating them with braided silk ligatures. The cranial thyroid vessels are isolated and similarly ligated (fig. 3). The cranial vessels are then divided. Removal of the intact gland is started at either cranial pole. The medial surface of the lobe is gently freed from the trachea by blunt dissection. The body of the lobe is grasped by the fingers (with

From Hanford Atomic Products Operation, General Electric Company, Richland, Wash. Major Barnes, V.C., U.S.A.F., is now at the University of California, Davis.

This paper is based on work performed under Contract No. W-31-109-Eng-52 for the Atomic Energy Commission.

The authors thank R. Thomas, Graphics Unit, Hanford Atomic Products Operation, Richland, Wash., for making the drawings.

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*Nembutal produced by Abbott Laboratories, North Chicago, Ill.

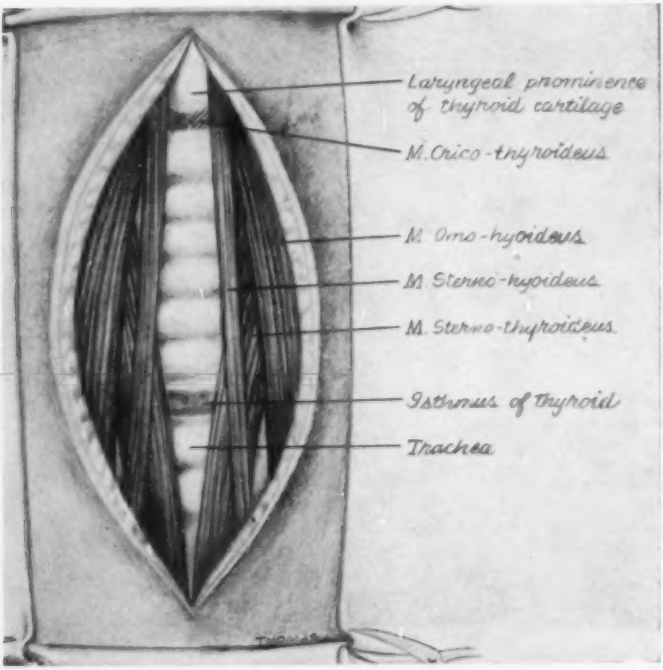

Fig. 1—Thyroidectomy of the sheep. When the skin and superficial fascia are retracted, the ventral surface of the trachea and paired muscles are exposed.

sterile gauze), gently retracted, and small, sharp-pointed hemostats are inserted from the front, just ahead of the line of incision which is then made adjacent to the dorsal border of the lobe. In this way, no special attempt is made to clamp the smaller individual vessels which enter the gland along this border. Instead, the tissue is clamped and ligated proximal to the hemostats. Reasonable care must be taken to avoid damage to the structures contained in the carotid sheath. Following ligation of each small mass of tissue, division between the ligature and hemostat is accom-

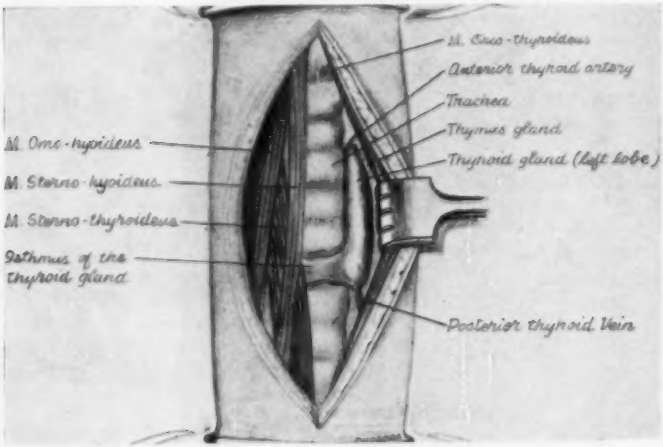

Fig. 2—Retraction of the skin and muscles of the thyroid area of the sheep, exposing the isthmus and left lobe of the thyroid gland.

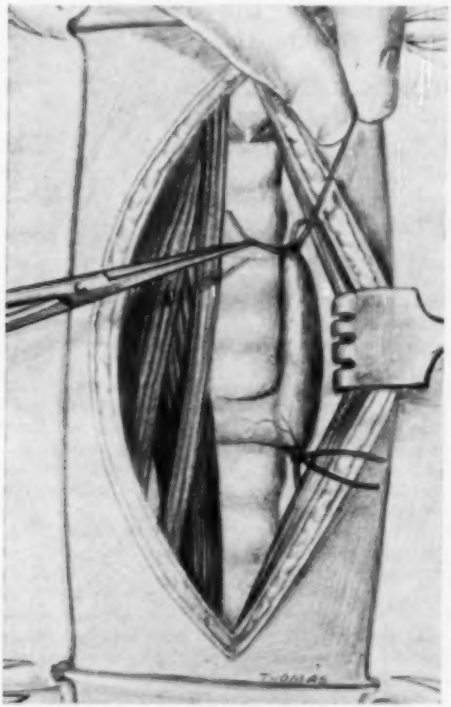

Fig. 3—During thyroidectomy of the sheep, the vessels supplying the left lobe of the thyroid gland are isolated and ligated.

plished by means of thermocautery to save time and minimize hemorrhage. When the doubly ligated caudal thyroid vessels are reached, they are divided and the lobe is rotated medially. The same procedure is followed in freeing the second lobe. When both lobes are free, the remaining attachment of the isthmus to the trachea is separated by blunt dissection and the intact gland is removed.

When the surgical area has been fully inspected for remnants of thyroid tissue, particularly in the region of the cranial and caudal poles, and all bleeding has been controlled, the incision is closed. Interrupted sutures of fine braided silk are used to approximate the sternothyroid and sternohyoid muscles, with stainless steel mattress sutures used in the subcutaneous tissue and skin.

Recovery from the anesthetic usually requires one to two hours. Six hours after complete recovery from the anesthetic, the animal is given feed and water, at first in limited amounts. Skin sutures are removed on the tenth postoperative day.

Cortisone for Excessive Granulations.—A British army mule, in Hong Kong, lost considerable skin from the cannon region. The wound (9 by 5 cm.) was treated with a penicillin ointment but supergranulations developed. In spite of being cauterized with silver nitrate and dressed with sulfonamide containing copper sulfate, it did not heal. When it was again cauterized to the skin level and then dressed twice daily with a fine film of 1 per cent hydrocortisone ointment, the wound cicatrized and healed in three weeks.—*J. Roy. Army Vet. Corps, Winter, 1956.*

Effect of Progesterone on Ovulation.—When 7 beef heifers, at the University of California, were given 1,120 mg. of progesterone six days before slaughter, and compared with controls, follicular growth had been definitely inhibited by the exogenous progesterone but there was no detectable effect on the hormone content of the anterior pituitary gland.—*J. Anim. Sci., Feb., 1957.*

Sedatives Accumulate in a Fetus.—Instead of the placenta forming a barrier, there is a tendency for most sedatives, regardless of how they are given, to pool in the fetus. Because of the less efficient detoxification and excretory mechanisms of the fetus, barbiturates were found to accumulate to a level almost twice that present in the mother.—*J.Am.M.A., Dec. 15, 1956.*

Transmission of Brucella Ovis.—Ovine brucellosis, which is widespread in New Zealand, causes impaired fertility in rams, abortion in ewes, and mortality in the newborn. Natural transmission of infection from ram to ram occurs during the mating season and ewes acquire the infection in mating. Vaccination simultaneously with strain 19 vaccine and an adjuvant vaccine, incorporating killed *Brucella ovis*, offers protection.—*Proc. Third Internat. Cong., Anim. Reproduction, Cambridge, 1956 (Sec. 2, 37-28); abstr. in Vet. Bull., Jan., 1957.*

Clinical Data

A Rapid Histological Technique for the Diagnosis of Infectious Avian Laryngotracheitis

R. P. PIROZOK, M.S.; C. F. HELMBOLDT, D.V.M., Ph.D.;
E. L. JUNGHERR, Vet. Dipl., D.M.V.

Storrs, Connecticut

A RAPID DIAGNOSIS of infectious laryngotracheitis is necessitated by the highly contagious and fatal nature of the disease.[1,4,5] Aside from gross pathological examination, which may be inconclusive, one must resort to such time-consuming methods as (*a*) transmissibility to known immune and susceptible birds by intratracheal or cloacal inoculation, (*b*) establishment of the disease in chicken embryos,[2,3] or (*c*) preparation of paraffin-embedded histological sections.[6] This communication reports on a rapid histological technique successfully employed at this station for the past two and one half years.

MATERIALS AND METHODS

The materials necessary for the technique are found in any well-equipped histopathology laboratory. The main advancement is the employment of carbowax 1000 W®* as an embedding medium for histological sectioning.[7] Since carbowax is water soluble, it eliminates the time-consuming dehydration and clearing processes necessary to the paraffin method.

The procedure is as follows:

1) Fix a thin section of the trachea in Zenker's fixative for one half hour in a paraffin oven if sample comes in the morning, otherwise overnight at room temperature.

2) Wash in water, several changes.

3) Put in 70 per cent carbowax for 15 to 30 minutes under 15 to 20 lb. of vacuum at 60 C. It is melted by the aid of heat and, when vapors appear, is mixed with water to the desired percentage.

4) Put into 90 per cent carbowax for 30 minutes under vacuum, as above.

5) Put into 100 per cent carbowax for 30 to 45 minutes, as above.

6) Block in 100 per cent carbowax and place in freezer (−20 C.) to solidify. Make changes in 100 per cent carbowax because it picks up moisture and then does not completely solidify.

7) Trim carefully as the block crumbles easily.

8) Mount the block on a holder with finger pressure. The holder should have small prongs so that the block can be made to adhere without the use of heat.

9) Cut sections at 10 μ. High humidity may cause difficulty.

10) Sections are placed on a slide which has been previously flooded with sodium silicate solution.† The carbowax will dissolve easily and leave the section free on the slide. Enough sodium silicate solution should be added to eliminate all dissolved carbowax. Care should be taken so as not to wash off the section.

11) Allow the section to dry; heat may be used, but with caution since too rapid drying tends to make the section loosen.

12) Bring sections rapidly through xylol to water and wash. Xylol is used here because experience has shown that sections prepared in this manner are more clearly stained than those which omit its use.

13) Stain sections with Harris' hematoxylin and triosin or eosin, dehydrate, clear, mount, and label.

DISCUSSION

At the time of this communication, more than 200 tracheal sections from suspected birds have been prepared, aiding materially in the differential diagnosis of laryngotracheitis.

In general, the necrotizing propensities[6] of the disease on the tracheal mucosa help in histological differentiation from other respiratory conditions, such as Newcastle disease, infectious bronchitis, and chronic respiratory disease, which elicit proliferative reactions in the tracheal mucosa (fig. 1). Laryngotracheitis is characterized by pathognomonic intranuclear inclusion bodies and by hemorrhagic necrosis of the tracheal mucosa.[6] In intact epithelial cells, the eosinophilic inclusion bodies are diagnostic (fig. 2). However, absence of these bodies is not unusual, owing to marked

From the Department of Animal Diseases, Storrs Agricultural Experiment Station, University of Connecticut, Storrs.

This study was supported, in part, by funds provided by Public Laws 733 (9b3).

*Carbowax, a solid polyethylene glycol, is a product of Carbide and Carbon Chemical Division, Union Carbide and Carbon Corporation, New York, N. Y.

†Sodium silicate is used as a slide fixative by this laboratory. It is prepared by taking 25 to 30 ml. of a stock solution (200 ml. of a 40 per cent aqueous solution of sodium silicate, 200 ml. of concentrated ammonium hydroxide, and 2,000 ml. of distilled water) and making it up to 1,000 ml. with distilled water.

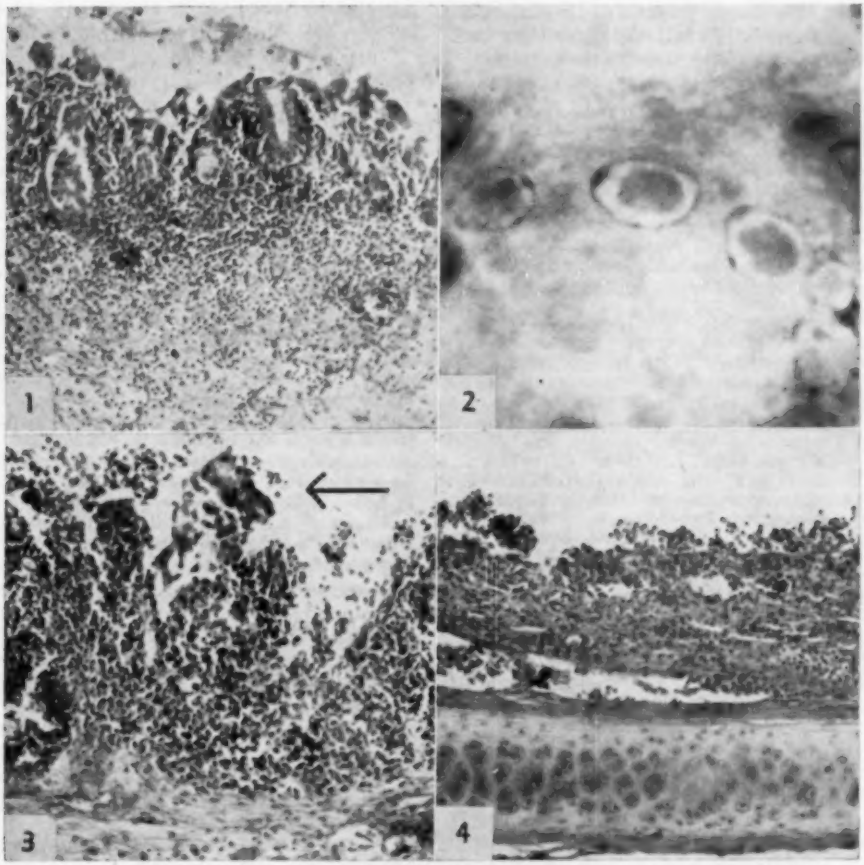

Fig. 1—Photomicrograph of trachea of chicken with chronic respiratory disease complex. The lamina propria is loosely infiltrated by round cell types and the tubular glands are intact but ballooned. Harris' hematoxylin stain; x 160.

Fig. 2—Photomicrograph of trachea of a chicken with infectious laryngotracheitis showing, in the center of the field, a trio of epithelial cells which have pathognomonic intranuclear inclusion bodies. Harris' hematoxylin stain; x 1,800.

Fig. 3—A low power view of the same tissue shown in figure 2. The arrow indicates the tag or island of epithelial cells which is about to be sloughed off. The neighboring epithelial cells are already lost. Harris' hematoxylin stain; x 160.

Fig. 4—Photomicrograph of trachea from a chicken with a terminal case of infectious laryngotracheitis. The trachea is completely denuded of epithelium and only remnants of the lamina propria remain (compare with fig. 1). The cartilage layer is shown at the bottom. Harris' hematoxylin stain; x 160.

mucosal destruction. In such cases, the epithelium is desquamated and rapidly loses its architectural identity. The exudate in the lumen consists of erythrocytes, heterophils, lymphocytes, histiocytes, and fibrin. Islands of sloughed epithelial cells, with characteristic inclusion bodies, may be found. The trachea is thus lined by a denuded mucosa (fig. 3, 4).

SUMMARY

The use of carbowax 1000 W® as an embedding medium for sectioning tracheas in the differential diagnosis of laryngotra-

cheitis has been tried. The results have been satisfactory. Reliable slides have been prepared in as little time as three hours.

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Isolation of a Pleuropneumonia-like Organism from the Air Sac of a Parakeet

H. E. ADLER, D.V.M., Ph.D.

Davis, California

Pleuropneumonia-like organisms (PPLO) have been isolated from a variety of avian and mammalian hosts.[1] It is the purpose of this paper to describe the characteristics of a PPLO recovered from the air sacs of a parakeet. The presence, apparently discovered for the first time, of PPLO in parakeets is of significance because it may make the isolation of the psittacosis virus more difficult.

According to the owner of a large aviary, a few birds had died each week of an unknown cause. Birds previously submitted from this flock to the George Williams Hooper Foundation were found to be free of psittacosis.

Six birds were submitted to this laboratory. At necropsy, three days later, 1 bird had a mild aerosacculitis and no other lesions. Exudate from the air sac of this bird was cultured on PPLO agar (Difco) supplemented with 10 per cent horse serum. After three days' incubation at 37 C., PPLO were observed on this medium. These colonies stained readily by the method of Dienes.[2]

The organism was propagated for six serial passages in PPLO broth (Difco) supplemented with 10 per cent horse serum and then seeded onto PPLO serum agar. Typical PPLO colonies were observed and there was no evidence of reversion to bacterial forms.

The organism failed to grow at room temperature or in the absence of horse serum. Fermentation reactions were tested in phenol red broth (Difco) enriched with 10 per cent horse serum and buffered to pH 7.8. The organism utilized dextrose, levulose, maltose, galactose, dextrin, starch, and mannose with the production of acid and no gas. During eight days of incubation, it did not ferment sucrose, lactose, dulcitol, or mannitol. Morphology of the organism was determined by staining with Giemsa after Bouin's fixation. The predominant type of organisms seen in broth after 24 hours of incubation were small coccoid forms approximately 0.25 to 0.5 μ in size. At two days, a few paler staining ring forms were seen.

An antigen was prepared from a seventh passage culture by a previously described technique.[3] Serum samples from 4 of the birds agglutinated the homologous antigen at titers ranging from 1:160 to 1:640. Three parakeet serums failed to agglutinate antigens prepared from PPLO isolated from turkeys and chickens. High titer serum prepared in rabbits from turkey and chicken strains of PPLO did not agglutinate the parakeet strain antigen beyond a dilution of 1:10.

Two series of chicken embryos inoculated via the yolk sac route failed to show mortality after nine blind passages. There were, however, large numbers of PPLO present in the embryos as demonstrated by subculture on serum agar from each passage.

Conclusions

A pleuropneumonia-like organism isolated from a parakeet is not related antigenically to several known chicken and turkey strains. Although the organism grew in chicken embryos, it failed to cause mortality.

From the School of Veterinary Medicine, University of California, Davis.

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The Isolation of Eastern Equine Encephalomyelitis Virus from Brains of Sparrows

A. H. DARDIRI, Ph.D., D.V.M.; V. J. YATES, D.V.M.; P. W. CHANG, D.V.M.; GEORGE H. WHEATLEY, B.S.; D. E. FRY, B.A.

Kingston, Rhode Island

In 1939, English sparrows were found to be susceptible to intracerebral inoculation with eastern equine encephalomyelitis (EEE) virus.[1] In 1940, similar results were reported from sparrow inoculations and it was further found[2] that the mosquito (*Aedes sollicitans*) was capable of infecting these birds with EEE virus. Several raisers of game birds in Rhode Island have reported observing sick sparrows before and during an outbreak of encephalomyelitis in pheasants. Although the above observations would indicate that natural infections in sparrows would be expected, the authors believe that such has not been reported.

The infection has occurred on one farm, in Rhode Island, producing game birds in each of the last three years. Figure 1 shows the locations of the various pens of birds on the farm and indicates the pens from which the virus was isolated.

During the 1956 outbreak, a catching net was erected by the Rhode Island State Department of Agriculture and Conservation at a place shown on the map near pens 1 and 2 where losses were encountered from EEE. Every morning, the sparrows found in the net were brought directly to the diagnostic laboratory. Routinely, the brains were harvested and used for histological and virus isolation studies. On Sept. 17, 1956, 2 dead sparrows (*Passer domesticus*)[3] were found hanging in the net and were submitted for examination. A composite sample from the brains was emulsified and mixed with heart infusion broth. Approximately 1 Gm. of the brain material was suspended in 5 ml. of broth. An inoculum of 0.15 ml. that contained 5 mg. of streptomycin was used in each of 5, 10-day-old chicken embryos. In less than 36 hours,

From the Department of Animal Pathology, University of Rhode Island, Kingston, (Dardiri, Yates, Chang, and Fry); Mr. Wheatley is manager of the Hianloland Game Farm, West Greenwich, R.I.

Contribution No. 903, Rhode Island Agricultural Experiment Station.

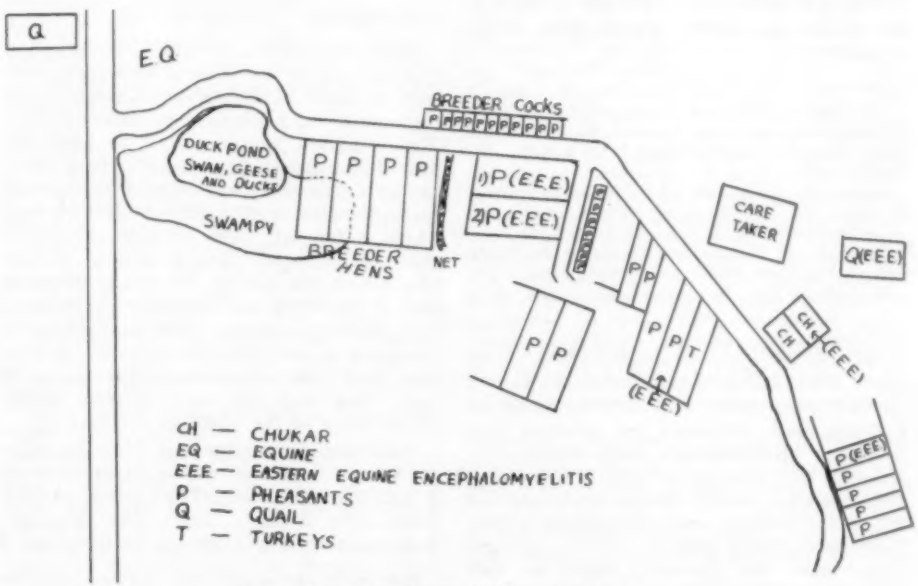

Fig. 1—Map showing game bird layout on the farm.

all the embryos were dead. The harvested aa fluid from this passage was used to inoculate a second set of 5, 10-day-old embryos and all of the embryos died within 26 hours. Antiserum against EEE was effective in neutralizing 100 e.l.d.$_{50}$ of this virus.[4]

TABLE I—Summary of EEE Isolations from Birds Submitted from the Infected Premises During the Outbreak

No. of submissions	Bird	Isolation of EEE virus
5	Pheasants	4
3	Chukar partridges	1*
6	Sparrows (wild)	1
3	Quail	1

*Western strain, the first time isolated in New England.

Half of the bird brains were fixed in 10 per cent formalin and sent to the Department of Animal Diseases, University of Connecticut, for histological examination. Lesions suggestive of equine encephalomyelitis were reported.

A summary of the EEE isolations from birds submitted from the infected premises during the outbreak is given (table 1).

The authors believe this to be the first reported isolation of EEE from a natural infection of sparrows. This observation fills one of the gaps in the epidemiology of the disease.

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Hog Cholera Virus in Sausage.—Meat from pigs artificially infected with hog cholera was made into various types of sausage and subjected to smoking and heating. When extracts from these were injected into susceptible pigs, it was found that smoking under normal conditions did not kill the virus nor did heating at less than 80 C. for at least five minutes.—*Rev. Path. gen., 56, 846-884; abstr. in Vet. Bull., Jan., 1957.*

Rotenone Poisoning of Swine

W. T. OLIVER, D.V.M., Ph.D., and
C. K. ROE, D.V.M., M.S.

Guelph, Ontario

Rotenone, a neutral crystalline substance, was isolated from plants in 1895.[1] Highly insecticidal, its chief application has been as a treatment against ectoparasites, especially in warble fly control programs. Although toxic to fish,[2] it has been reported to be relatively harmless to warm-blooded animals.[3]

The oral l.d.$_{50}$ for rats is 132 mg. of rotenone per kilogram of body weight;[4] 200 mg. per kilogram failed to kill a dog.[5] Cattle which received 18 mg. of the drug per kilogram of body weight as a single dose developed a transient inappetence and dyspnea but were not otherwise significantly affected.[6] Swine, on the other hand, are much less tolerant to rotenone. Oral administration of 3.7 mg. per kilogram killed pigs, usually within four hours. The pigs showed signs of salivation, vomition, incoordination, and respiratory depression. Necropsy lesions chiefly consisted of varying degrees of gastrointestinal congestion which was, in no case, severe. Epicardial hemorrhages were observed in 1 animal.[6]

Case Report

In March, 1956, a partially paralyzed pig was brought to the Ontario Veterinary College. It was 1 of a litter of 10, 3-month-old pigs being fed a commercial grower ration. The condition was reported to have appeared coincidentally with the first feeding of a new batch of ration. The pigs had seemed normal until one hour after feeding when a few of them showed salivation, muscular tremors, and vomition. Within two hours, the entire litter was affected, and 6 exhibited an ascending incoordination which progressed from staggering to paralysis of all limbs, respiratory depression, and coma. In another two hours, 4 were dead and the other 6 died within eight hours of the onset of illness.

Lesions.—At necropsy of 5 of the pigs, the organs examined were characterized by a lack of gross lesions. The gastrointestinal tract, liver, kidneys, heart, and lungs appeared essentially normal. Bacteriological

From the Department of Medicine and Surgery, Ontario Veterinary College, Guelph.

cultures of the spleen, liver, and brain contained no pathogenic organisms.

Analyses.—The feed contained a finely divided, creamy brown, slightly aromatic powder which gave positive tests for rotenone.[7,8] Similar reactions were obtained from organic extracts of the ingesta. Quantitative analyses, determined titrimetrically,[9] showed that rotenone constituted 2.5 per cent of the powder and 2,130 p.p.m. of the ingesta.

DISCUSSION

In the fatal poisoning of pigs by rotenone, the onset was sudden and the course rapid. The compound appeared to produce a type of ascending paralysis which first affected the hindlegs.

Since rotenone oxidizes to less toxic derivatives in the presence of light, it has a low residual persistence. For this reason, the agent is considered to be a safe insecticide under field conditions. However, its acute toxicity for pigs and potential toxicity for other species should not be overlooked.

Investigation established that a container of rotenone had been spilled over the floor of a mill. The powder was swept into a feed bin, the contents of which were later included in the new feed batch.

SUMMARY

In swine, rotenone produced a rapidly fatal poisoning characterized by paralytic symptoms and an absence of marked pathological changes.

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A Preliminary Report on a Brucella Isolated from the Desert Wood Rat *Neotoma Lepida* Thomas

HERBERT G. STOENNER, D.V.M., and
DAVID B. LACKMAN, Ph.D.

Hamilton, Montana

During studies on natural diseases of fauna in the Great Salt Lake Desert in Utah, five isolates of a Brucella-like organism were recovered from *Neotoma lepida*. With the exception of slow fermentation of some carbohydrates, the other biochemical properties of this organism were identical with those of Brucella. A brief description of this bacterium is presented.

Essentially, procedures recommended[1] were employed in the identification of isolates. In comparative studies concerning hydrogen sulfide (H_2S) production, fermentation reactions, and sensitivity to dyes, smooth cultures of *Brucella abortus* (19-26A), *Brucella suis* (6), and *Brucella melitensis* (16M) were used as controls.

The newly isolated bacterium is a nonmotile coccobacillary organism which is morphologically and tinctorially indistinguishable from Brucella. Colonial characteristics also are identical with Brucella. The organism grows aerobically at 37 C. and increased carbon dioxide (CO_2) tension is not required for primary isolation. Neither flagella, capsule, nor endospores could be demonstrated with appropriate strains. Maltose, sucrose, lactose, trehalose, raffinose, melezitose, rhamnose, inositol, and inulin are not fermented but acid without gas is slowly produced in arabinose, galactose, levulose, xylose, and dextrose. With the exception of slight fermentation of arabinose by *Br. suis*, acid production did not occur in these five sugars inoculated with the three recognized species of Brucella. The organism is urease positive and it reduces nitrates. Indole is not produced and Voges-Proskauer and methyl red tests are negative.

From the U. S. Department of Health, Education, and Welfare, Public Health Service, National Institutes of Health, National Institute of Allergy and Infectious Diseases, Rocky Mountain Laboratory, Hamilton, Mont.

This work was supported under U.S. Army Chemical Corps Interagency Agreement Order No. CD4-4345 with the Rocky Mountain Laboratory, Public Health Service, Department of Health, Education, and Welfare, Hamilton, Mont.

Collection of N. lepida specimens by the staff of the University of Utah, Dugway, is gratefully acknowledged.

The amount and duration of H_2S production on tryptose agar were similar to that of *Br. suis*. In dye-sensitivity tests, all five isolates were inhibited by concentrations of thionin and basic fuchsin that are ordinarily used for typing Brucella.[2]

By cross absorption of antiserums with formalin-killed suspensions, the organism could not be distinguished antigenically from *Br. abortus*. Agglutinins in *Br. abortus* antiserum were completely removed by absorption with the Brucella from Neotoma and antibodies in antiserums prepared against the new Brucella were completely removed by absorption with *Br. abortus*.

The organism was regularly recovered from mice, hamsters, and guinea pigs for at least 42 days after inoculation, the longest interval studied. The minimum infective dose (m.i.d.$_{50}$) for mice was two to three organisms, whereas the m.i.d.$_{50}$ for guinea pigs was about a hundredfold greater. Gross pathological changes, even in animals which received heavy doses, were minimal; multiple necrotic foci, such as are seen in the livers and spleens of animals infected with three known species of Brucella, were irregularly observed.

Since most of the biochemical characteristics, antigenic composition, and colonial and cellular morphology are identical with those of *Br. suis*, it is illogical to assign the newly isolated bacterium to a genus other than Brucella. However, fermentation reactions in dextrose, levulose, xylose, arabinose, and galactose; dye sensitivity pattern; and comparative infectivity for mice and guinea pigs differentiate the organism isolated from *N. lepida* from other Brucella.

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Absorption of Vitamin Supplements in Lizards

Clinical debility and varying degrees of paresis occurred in the tejues, green iguanas, and Indian monitor lizards of the Lincoln Park Zoo, Chicago, during the last six months of 1956. Vitamin supplements were added to the rations of these animals but the response was unsatisfactory. Multiple vitamins, vitamin B complex, and liver products were then injected intramuscularly once or twice per week and, within two weeks, a marked, progressive improvement was evident in 90 per cent of the animals. When the injections were stopped, there was a gradual decline in their condition.

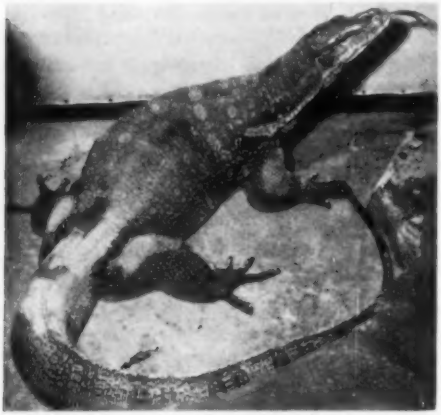

Fig. 1—An Indian monitor lizard.

Necropsy of the few which died showed no gross pathological changes; a microscopic study was not made.

This appears to be a physiological problem related to lack of absorption of vitamins from the intestinal tract. Possibly, others have encountered this problem. It indicates a need for further research on what constitutes a balanced ration for these and other animals in captivity.—*L. E. Fisher, D.V.M., Berwyn, Ill.*

Chloramphenicol in Virus Pleuropneumonia of Pigs.—When 70 pigs with virus pleuropneumonia were injected with large doses of chloramphenicol at 2 to 3 months of age, then their health and growth compared with 150 nontreated similar pigs, the incidence of coughing was not diminished and their growth was similar. However, the injected pigs did not develop secondary pneumonia.—*Vet. Rec., Dec. 29, 1956.*

When 50 mg. of growth hormone was injected daily for one week, 5 of 8 cows had a marked increase in milk yield for periods of two to eight weeks; 3 cows showed no response.—*J. Dai. Sci., Jan., 1957.*

What Is Your Diagnosis?

Because of the interest in veterinary radiology, a case history and accompanying radiographs depicting a diagnostic problem are usually published in each issue of the JOURNAL.

Our readers are invited to submit case histories, radiographs, and diagnoses of interesting cases which are suitable for publication.

Make your diagnosis from the picture below—then turn the page ▸

Figure 1

History.—A male Persian cat, 7 years old, became lame in the left foreleg. At first, the lameness was thought to be in the foot but a radiograph revealed no lesions. The lameness continued, and three months later, a swelling appeared in the region of the shoulder. The radiograph shown here was taken at that time.

This case was submitted by members of the staff of the Riser Animal Hospital, Skokie, Ill.

Here Is the Diagnosis

(Continued from preceding page)

Diagnosis.—An osteoclastic (bone-absorbing) tumor affecting the proximal extremity of the humerus of a cat. (The later histological diagnosis was chondrosarcoma.)

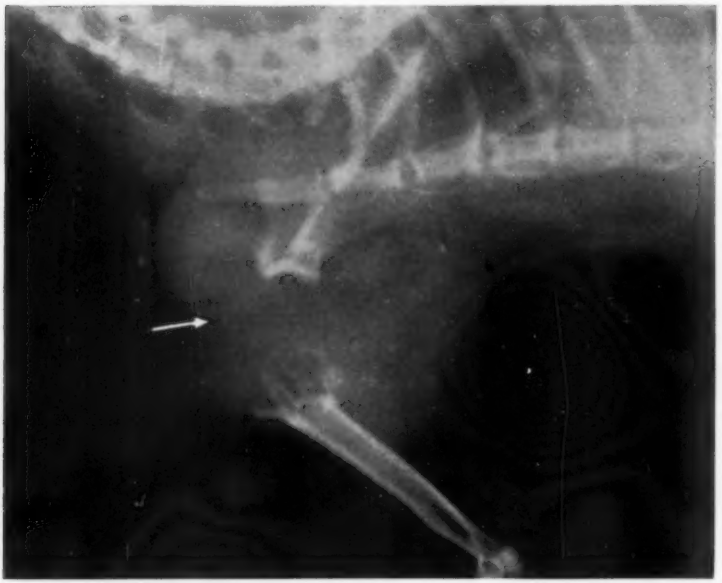

Fig. 2—Radiograph, lateral view, of front leg of a cat showing a bone tumor eventually diagnosed as a chondrosarcoma. Notice that only the humerus is affected at this stage (arrow).

COMMENTS

The radiograph suggested a chondrosarcoma because the articular portion of the proximal extremity of the humerus was destroyed and there was great tumor proliferation between it and the scapula.

The cat was allowed to live for one year after the radiograph was taken. At necropsy, the tumor had grown to twice the size shown in the radiograph, and about one half of the humerus and two thirds of the scapula had been destroyed. Histological sections made from tissue taken at necropsy confirmed the diagnosis of chondrosarcoma. No metastases were found. The tumor was composed of neoplastic elements, cartilage, fibrous connective tissue, and giant cells.—*W. H. Riser.*

• • •

A chondrosarcoma or a giant cell tumor might be suspected because of the bone destruction and the length of time that the cat lived after the tumor first appeared. Chondrosarcomas, however, are frequently radiopaque, due to calcium deposition in the cartilaginous tissue which is formed. Our x-ray diagnosis would be malignant osteoclastic tumor, probably giant cell.

This radiologist would reserve the right to disagree with the pathological findings. A massive growth such as this, at times, offers a better radiological diagnosis than does a tiny section taken by the pathologist from one part of the growth.—*Publications Committee, American Veterinary Radiological Society.*

Melioidosis (Pseudomalleus) in Sheep, Goats, and Pigs on Aruba (Netherland Antilles)

P. SUTMÖLLER, D.V.M.; F. C. KRANEVELD, D.V.M.; A. VAN DER SCHAAF, D.V.M.

Utrecht, Netherlands

MELIOIDOSIS, generally a chronic disease, was observed for the first time in 1912 in Rangoon[20] when postmortem examinations of a number of persons dead of the disease revealed lesions resembling those of glanders. The causative microorganism, first called *"Bacillus pseudomallei,"* was later termed officially, *"Malleomyces pseudomallei,"* and the disease, "melioidosis."[7]

LITERATURE CITED

The disease occurs in man chiefly in southeastern Asia—Malaya,[17] Indochina,[5,7] Indonesia,[11,16] Thailand,[14] and Guam.[10]

There are only two reports of melioidosis in persons who were known to have never been outside the Western Hemisphere. The first[9] was a man, 31 years old, who had been in the Panama Canal Zone several years prior to the onset of his illness. The second case,[1] believed to have originated in the Western Hemisphere, was a woman, 25 years old, who had never been outside of the United States.

In the human being, the disease may run a course of a septicemia or give a pyemic appearance. It may also occur as a slow, chronic infection, with formation of abscesses in different parts of the body, such as lungs, liver, spleen, kidneys, joints, bones, and lymph nodes. Formerly, the disease was nearly always fatal, but it has been found to respond favorably to chloramphenicol therapy.

Since the disease occurred epizootically in the stock of laboratory animals at Kuala Lumpur, Malaya, the reservoir of the agent was originally sought among rodents.[17] Later,[18] the organism was isolated from a horse with a transient nasal discharge. In 1938, *M. pseudomallei* was cultivated from an abscess of the lung of an Indonesian horse suspected of having malleus.[15] In 1952, 3 fatal cases of melioidosis in race horses in Malaya were described,[4] the diagnosis being confirmed on necropsy.

In Ceylon, *M. pseudomallei* was isolated from the pus from a splenic abscess of a cow which died suddenly following a rupture of the abscess into the peritoneal cavity.

Since 1950,[2] it has been known that the organism occurs among sheep in Australia and, more recently,[8] it has also occurred in goats. The sheep showed lameness, coughing, and nervous symptoms.[3] Necropsies revealed abscesses in the viscera from which *M. pseudomallei* was isolated. In goats, the disease may be acutely fatal or chronic, sometimes leaving only sterile abscesses or healed lesions. At necropsy, the lesions are similar to those seen in affected sheep.

In Madagascar, *M. pseudomallei* was isolated from the submaxillary lymph nodes of a hog.[6] The diagnosis was confirmed when guinea pigs, injected with infected material from the hog, became ill with the disease.

Fig. 1—Aruban sheep showing emaciation and polyarthritis due to melioidosis.

Dr. Sutmöller was, from 1953 until 1956, director of the Veterinary Service, Aruba, Netherland Antilles; Dr. Kraneveld is professor and director, Institute for Tropical and Protozoan Diseases, Veterinary Faculty, University of Utrecht; Prof. A. Van der Schaaf is director of the Institute for Veterinary Bacteriology, Veterinary Faculty, University of Utrecht, Netherlands.

This investigation was supported by a grant from the Netherlands Foundation for the Advancement of Research in Surinam and the Netherland Antilles (WOSUNA). The antigen for the complement-fixation test was supplied by Prof. Moh. Roza, Veterinary Institute, Bogor, Indonesia.

Fig. 2—Sheep's lung in situ showing abscesses and pneumonia.

In Vietnam, the disease occurred among 120 hogs in 1956.[12] At necropsy, the chief lesions were abscesses filled with a creamy pus in the mediastinal lymph nodes and lungs, and sometimes small foci in the spleen.

Thus, *M. pseudomallei* is a microorganism which is pathogenic for man as well as for several species of animals. The disease has been reported predominantly from the tropics and subtropics of the Eastern Hemisphere. Therefore, its occurrence in other parts of the world is noteworthy. This report deals with recent observations of the infection on Aruba, Netherland Antilles (near Venezuela).

MELIOIDOSIS IN ARUBA

In the Aruban slaughterhouse, abscesses were often found in the lymph nodes of goats, sheep, and pigs. In the goats and sheep, the prescapular lymph nodes were most often diseased, while in pigs the retropharyngeal nodes were more often affected.

Fig. 3—Liver, kidney, lungs, and spleen from a sheep with melioidosis showing many foci of infection.

The pus in these abscesses was grayish yellow and creamy. On culture, some showed a pure growth of a gram-negative, motile rod which formed somewhat slimy, grayish white colonies 1 to 2 mm. in diameter. At first, the growth in broth was poor but after ten days a wrinkled surface pellicle was formed. The fermentation of carbohydrates was weak.

The same kind of microorganism was isolated from abscesses observed in a herd of native sheep. Within a few weeks, 25 of the 90 sheep died, while many of the surviving animals became thin and showed polyarthritis (fig. 1). About 10 per cent of the sheep had swollen lymph nodes, some

Fig. 4—A Strauss reaction in a male guinea pig after an intraperitoneal injection of a suspension of Malleomyces pseudomallei.

Fig. 5—Foci of infection in lungs of the guinea pig. (fig. 4).

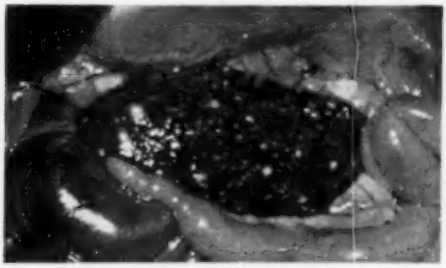

Fig. 6—Swollen spleen of guinea pig (fig. 4) showing many foci of infection.

of which had burst. In a few animals, an affected joint capsule would rupture. In addition to these changes, necropsies revealed abscesses in the lungs, liver, spleen, and kidneys (fig. 2, 3).

When 17 strains of the microorganism, isolated from 15 sheep and 2 goats,* were subjected to a more extensive study, a high virulence for several laboratory animals was demonstrated. Male guinea pigs, injected intraperitoneally with the organism, showed a positive Strauss reaction (fig. 4) and a fatal septicemia within ten days. On necropsy, small foci of infection were seen in the organs (fig. 5, 6). Also, rabbits and mice could be artificially infected and developed abscesses in the viscera and regional lymph nodes.

As a result of these findings and the cultural characteristics, the microorganism could be identified as *M. pseudomallei*. This was later confirmed by examination of the serums of artificially infected laboratory animals by the complement-fixation test with a melioidosis antigen of an Indonesian strain.

SUMMARY

Melioidosis is common in sheep and goats in Aruba, Netherland Antilles (in the Caribbean) and may also occur in pigs. The disease manifests itself by chronic abscesses in viscera, joints, and lymph nodes.

The causative agent (*Malleomyces pseudomallei*) was identified by cultural, pathological, and serological tests.

*At the Institute for Tropical and Protozoan Diseases and the Institute for Veterinary Bacteriology, Utrecht, Netherlands.

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Tissue Cultures of Rinderpest Virus.—The Kabete 'O' strain of virulent rinderpest virus was found to multiply in monolayers of bovine embryonic kidney cells and to produce characteristic cytological changes.—*Nature, Feb. 9, 1957.*

Ehrlichia Canis Infections in Dogs on Aruba (Netherlands Antilles)

P. H. BOOL, D.V.M., and P. SUTMÖLLER, D.V.M.

Utrecht, Netherlands

ERLICHIA CANIS,[1] synonym for *Rickettsia canis*,[2] is mentioned as a cause of disease in the Mediterranean area, India,[3] and almost all parts of Africa.[4] Our morphological blood examination of dogs on Aruba (near Venezuela) suffering from a serious illness accompanied by fever, anemia, and severe emaciation, however, showed that some of these animals were infected not only with one or more blood parasites (*Babesia canis, Hepatozoon canis*) but also with the above mentioned *E. canis*. Specimens of *Rhipicephalus sanguineus* taken from an Aruban dog were used to infect a laboratory dog in Utrecht, after which it was possible to pass the parasite along through 6 other dogs. These animals showed clinical signs bearing a marked resemblance to the Aruban sickness and *E. canis* could be found in blood and organ smears. These findings make it clear that *E. canis* occurs on the island Aruba and, as it was present in 4 of 7 dogs examined, it would seem that the infection there is widespread. It is possible that this infection also plays a role in other sections of the Caribbean area, complicating some of the clinical causes of distemper and piroplasmosis.

It, therefore, seems important to elaborate on the information which was obtained from the literary research and from the experimental infections.

In 1935, a severe disease among dogs in Algeria was described as a Rickettsia.[2] The organisms generally assemble in round colonies of 2.0 to 10.0 μ but are also seen as closely packed granules from 0.5 to 1.0 μ. They may also occur as loosely connected, more pointed forms from 1.0 to 1.5 μ in size. The "bacilliform bodies," as they are described,[5] were not seen.

Stained with Giemsa, the coccoid element showed a typical bluish purple color. Attempts to stain with Castañeda showed no results.

Ehrlichia canis in the blood is almost always found in the monocytes—mostly in colonies up to 14 in one cell—also dispersed through the cell as granules (fig. 1). Occasionally, a neutrophil (segmented and staff granulated) and, once, a lymphocyte infected with *E. canis* have been seen.

In 1943, a cycle was described[6] which starts with a "corps initial" of from 3.0 to 6.0 μ which stains red with May-Grünwald-Giemsa and separates into elementary bodies by way of a morula stage, each of the component parts now staining purple with May-Grünwald-Giemsa. This cycle thus shows some resemblance to the viruses of the psittacosis-lymphogranuloma-venereum group.

Although a homogeneous sphere, red-stained by Giemsa, was seen on one occasion inside a monocyte, and whereas we think it probable that both types of granules were developing forms, we are unable, as was Coles,[7] to speak of a development cycle.

Under normal circumstances, *Rh. sanguineus* transmits *E. canis*. It has been shown[2] that these ticks are infectious in all stages and that transovarian transmission is possible.

Experimentally, the infections can be transmitted with blood or emulsion of organs intravenously or subcutaneously.

Not only all breeds of dogs but jackals (*Thos mesomelas*)[8] and *Macacus inuus*[9] are susceptible and, perhaps, also wild dogs (*Lycaon pictus*).[8] Infected guinea pigs are reported to develop fever and emaciation with an enlargement of spleen and liver and signs of orchitis or vaginitis.[10] These results we can not confirm. Moreover, the causal agent was not reported as being found in the guinea pig.[10]

In the dog, the disease can be quickly fatal or it can be a chronic disorder with death, after a period of gradual decline, or clinical recovery.

In the experimental infections, the incubation period was seven to 21 days, then a high fever (105.8 to 107.6 F.) which lasted one to three weeks was followed by a normal temperature. Lethargy, lack of appetite, and a progressive anemia with poor blood coagulation and fast sedimentation rate characterized the febrile stage. The enlarged spleen was easily palpated. Other signs observed include enlarged superficial lymph nodes, a mucopurulent conjunctival secretion and, in one instance, a quickly disappearing rash. The literature also mentions characteristic purple gums, vomiting, coughing, and an increased sensitivity in the bladder region. Nervous symptoms such as convulsions and paralysis are mentioned.[10] We

From the Institute for Tropical and Protozoan Diseases, Veterinary Faculty, State University of Utrecht, Netherlands (director: Prof. Dr. F. C. Kraneveld). Dr. Bool is a scientific co-worker of Prof. Kraneveld and Dr. Sutmöller was, from 1953 until 1956, director of the Veterinary Service, Aruba (Netherland Antilles).

The authors thank the director of the Pasteur Institute at Algeria, Dr. E. Sergent, for confirming our diagnosis, and the Netherlands Foundation for the Advancement of Research in Surinam and the Netherland Antilles (WOSUNA) for the support given in our research.

also saw central nervous system involvement due to a meningitis.

After clinical recovery the dogs remain as carriers of *E. canis* for a period of months and then become susceptible to reinfection.

Reports on the mortality differ greatly. In one experiment[3] all 30 infected dogs died after 15 to 70 days of illness. Generally, the course of the disease is considerably less severe, especially in experimentally induced cases. A mortality rate of 50 per cent and great differences in pathogenicity of the agents is reported.[11]

DIAGNOSIS

The macroscopic findings at necropsy are not specific. Anemia; enlargement of spleen, liver, and lymph nodes; petechiae of the lungs; and hyperactive bone marrow are constant findings. Other important clues are bleeding and ulcers in the intestinal tract, ulcers on the gums, ascites, hydrothorax, and lung edema. This can be partially explained by the overworked, decompensated heart of these anemic animals.

When *E. canis* is present in the peripheral blood in such an amount that the organisms can be shown in a stained blood smear, then the microscopic diagnosis can be made with little difficulty. Although the number of infected monocytes in a blood smear is always restricted, the examination of a slide is relatively easy as the leukocytes are usually localized along the edges and at the ends of the slide. The period in which *E. canis* can be found begins two to three days after the start of the febrile reaction and lasts until the end of the attack. Thereafter, with the exceptions of perhaps later febrile periods and of the last few days preceding death, the result of microscopic blood examination is irregular and diagnostically unreliable.

The early monocytosis, the almost complete disappearance of the eosinophils, and the later anemia (anisocytosis, polychromasia, normoblasts) can be considered an indication that the animal is a victim of *E. canis* if other infections are excluded.

A biopsy of the spleen or liver, but especially of the lungs, if this procedure is permitted by the owner, should provide a diagnosis. If not, the disease must be differentiated from distemper, babesiasis, and severe worm infections which it may resemble.

This can be done by several diagnostic procedures: (*a*) Splenectomy can be performed on a number of dogs from the suspected area—an infected animal will then develop a clinical and parasitological relapse; (*b*) the injection of 10 to 20 cc. of citrated blood from a suspected animal into a test dog (it should be borne in mind that the laboratory animal may be immune); (*c*) the injection of tissue suspension of ticks (*Rh. sanguineus*) taken from the suspected animal or the transplantation of the living ticks to the test animal.

At necropsy of artificially infected dogs

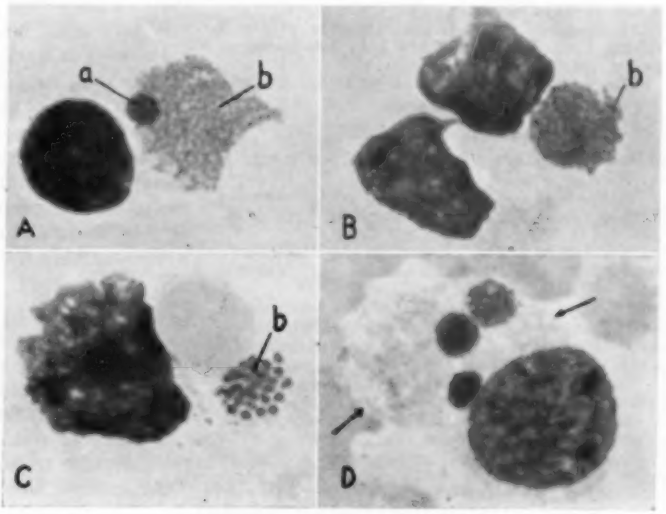

Fig. 1—(A) Blood smear of a dog showing Ehrlichia canis, a compact (a) and a dispersed (b) colony. (B, C) Smears from the dog's lung showing one colony (b). (D) Smear from the dog's lung showing three colonies in a cell (arrows). x 2,000.

killed at the peak of illness, *E. canis* may be found in any organ, especially in the lungs, spleen, and liver, but also in the bone marrow, cortex of the brain, and the lymph nodes. It has also been found in the mucosa of the intestines and in the skin, generally in the region of the maculae.

TREATMENT

Sulfanilamides have been recommended for treatment, either sulfapyridine (0.25 Gm./kg.) daily for five days[5] or sulfamethazine[12] (0.125 Gm./kg.) daily for four days.[12] Recurrences were rare.

In treatment of dogs on Aruba, sulfonamides seemed of benefit in the first stages of the disease but were of little influence when used later.

SUMMARY

Diseased dogs on Aruba (in the Caribbean) were found to be harboring *Ehrlichia canis* as well as other disease-causing agents. This infection could be transferred by ticks (*Rhipicephalus sanguineus*) to laboratory animals in Utrecht, Netherlands.

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Creosote Can Cause Cancer in Mice.—Creosote oils, obtained from distilling coal tar at high temperatures and used principally for the preservation of wood, or as germicides, are carcinogenic when a drop is applied to the skin of mice three times per week. The benzopyrene in coal tar is known to cause cancer but it is not present in creosote oils.—*Sci. News Letter, Feb. 16, 1957.*

Sheep Gain Less when Fed Antibiotic.—When 65-lb. lambs on a ration of ground corncobs (80%) and concentrate mixture (20%) were fed chlortetracycline at levels of 1 to 10 mg./lb. of feed, at the Kentucky Agricultural Experiment Station, the apparent crude fiber digestibility decreased at all levels except 1 mg. The initial supplementation of 5 and 10 mg. caused a loss of appetite within 40 to 72 hours.—*J. Anim. Sci., Feb., 1957.*

DDT Poisoning in Fish.—When a section of the Blue Nile River (Anglo-Egyptian Sudan) was sprayed by air with an emulsifiable oil containing DDT in a quantity calculated to produce 0.09 p.p.m. in the water, hundreds of fish died. The gills were almost white and they were severely bloated. Fish and nonfatty animals are more sensitive to DDT than are fatty animals.—*Nature, Sept. 8, 1956.*

Effect of Vitamin A Deficiency on Egg Production.—Egg production ceased about 120 days after hens were changed from a high level to a vitamin A-deficient ration, in Australia, and deaths occurred about 44 days after the hens stopped laying. The only constant lesions were oral and esophageal pustules, an accumulation of urates in the kidneys and ureters, and urate deposits on the peritoneum in about 50 per cent of the hens. Ocular and nasal lesions were relatively uncommon.—*World's Poult. Sci. J., Oct., 1956.*

The ordinary household water softener will not remove fluoride compound such as is added to drinking water. The commercial type of softener, known as a demineralizer, will remove the major portion of the fluorides so long as they are ionizable. —*J.Am.M.A., Nov. 17, 1956.*

Calcium and Zinc in Parakeratosis

When weanling pigs, 6 to 7 weeks old, were given a ration containing 0.65 per cent calcium and 0.53 per cent phosphorus, at Michigan State University, good growth, but a 10 per cent incidence of parakeratosis, resulted. With a ration containing 1.25 per cent calcium and 0.95 per cent phosphorus, there was poor growth and all developed parakeratosis. Feeding a ration containing 0.51 per cent calcium and 0.61 per cent phosphate resulted in depressed growth and 40 per cent incidence of parakeratosis, but when the calcium content was increased to 1.21 and 1.9 per cent, both with 0.61 per cent phosphorus, growth was severely depressed and all the pigs developed parakeratosis.

With all of these rations, when 50 p.p.m. of zinc (as zinc carbonate) was added, the growth rate was markedly increased, feeding efficiency was improved, and no parakeratosis developed. All cases of parakeratosis were alleviated when zinc was added. Dietary zinc increased serum alkaline phosphatase activity.—*J. Anim. Sci., Feb., 1957.*

Zinc Therapy in Swine Parakeratosis.—Intensive investigation, in Schleswig-Holstein, indicated that zinc was beneficial, both prophylactically and therapeutically, in swine parakeratosis. It is assumed that the zinc influences calcium-phosphorus metabolism but how this is accomplished is not clear.—*Praktische Tierarzt (Hanover), Jan. 1, 1957.*

Aortic Rupture from Feeding Sweet Peas.—Dissecting aneurysms, characterized by splitting of the media of the aorta, occurred in rats fed sweet pea meal. Other abnormalities produced include skeletal deformities, paralysis, and hernia formation. A whole wheat, casein, and milk powder control ration, when mixed half and half with crude ground sweet pea seed, was followed by severe vascular disease with 8 of 24 rats dying of aortic rupture and definite lesions in most of the other 16. Evidence of elastic tissue destruction, plus fibroblast proliferation, also occurred in the pulmonary arteries, coronary arteries, and the atrial endocardium. Recent investigations indicate that the toxic component is *beta*-aminopropionitrile. This disintegration of elastic tissue may be an important factor in the aging of many tissues, notably in the lungs, heart valves, blood vessels, bones, and joints.—*Nutr. Rev., Feb., 1957.*

Excess Calcium and Parturient Paresis

Typical parturient paresis was produced in cows by feeding an excess of calcium for one to six months before calving. It is suggested that the hypercalcemia produced led to atrophy of the parathyreid glands which, as a result, were not able to produce sufficient hormone to meet the demands of suddenly increased lactation. High protein feeding may likewise be a factor since it increases absorption of calcium from the intestine. It also stimulates the mammary gland to increase milk secretion.—*Nord. Vet.-med., 8, 507-513; abstr. in Vet. Bull., Jan., 1957.*

Sewage Sludge Fed to Sheep.—When a dried, activated sewage sludge was the source of 18 per cent of the nitrogen in a ration in which soybean oil meal and urea produced a crude protein content of 11 to 12 per cent, at the University of Illinois, it resulted in a significantly lower apparent digestibility of protein but a higher biological value. The sludge, being a fermentation product, may contain factors which affect the rumen fermentation and rumen biosynthesis of protein in such a way as to produce a protein of higher biological value.—*J. Anim. Sci., Feb., 1957.*

Urea of No Value in Swine Ration.—At low levels of 0.16 and 0.31 per cent of the ration, at the Iowa Agricultural Experiment Station, urea had no harmful effects on gains in swine; but when 10 or 20 per cent of the protein was replaced with equivalent amounts of urea nitrogen, gains were significantly decreased. The decrease was more severe with the lower levels of protein.—*J. Anim. Sci., Feb., 1957.*

Residual Estrogen in Tissues.—After cattle had been fed 10 mg. of diethylstilbestrol, dienestrol, or hexestrol daily for some time, residues could regularly be detected in the kidney and kidney fat, also in the intestines, liver, and muscles after the diethylstilbestrol feedings.—*J. Anim. Sci., Nov., 1956.*

Editorial

A Milestone in Hog Cholera Control

A bill (H.R. 5933) to "control the preparation [and] distribution . . . of virulent hog cholera virus" was introduced in Congress on March 13, 1957. Its major object is to terminate the use of virulent virus in the vaccination of swine against cholera by Jan. 1, 1958. This is an epochal forward step for the swine industry in this country.

Whether we live with or eradicate certain diseases depends largely on our collective "state of mind," and the veterinary profession has never failed to work for what is best for the livestock industry.

Hog cholera, also known as swine fever, is truly an American disease, having first been reported in Ohio in 1833. It was one of the first major animal diseases found (1903) to be caused by a virus, and production of an immunizing agent was a notable pioneering accomplishment. Nevertheless, the method developed (1908) of simultaneously vaccinating susceptible pigs with virulent virus and anti-hog cholera serum has been as effective as any immunizing method ever devised for a disease.

Regardless of this effectiveness, the producers were disappointed at their failure to develop a safer vaccine, because they were well aware of the danger of using this fully virulent virus. However, not until 30 years later was an effective killed vaccine produced. Since 1951, several modified virus vaccines have been introduced and in 1956 they were used on nearly 70 per cent of all pigs vaccinated in the United States. In six years, the use of the virulent virus method dropped from about 96 to 28 per cent.

A Dangerous Inconsistency

Hog cholera is unique among the infectious diseases of domestic animals in America; it is highly contagious, highly fatal, and it invariably kills, in a few weeks, nearly 100 per cent of the unvaccinated animals in a herd. In spite of this, in most states, the virulent virus has been sold with only token restrictions to almost anyone who cared to purchase it.

We can think of no greater inconsistency in modern medicine than this, because this virus vaccine can, and frequently does, start new outbreaks of the disease. How long would this indiscriminate distribution of a lethal agent have been tolerated had man or pet animals been susceptible?

In the many countries where hog cholera has been eradicated, the distribution and use of the virulent virus is prohibited. In Canada, from which we are separated chiefly by an imaginary line, the use of hog cholera virus is forbidden and the disease has appeared there only once since 1946. It was quickly eradicated. However, much of the credit for keeping hog cholera out of Canada must go to their wisdom in long requiring that all commercial garbage be cooked before it is fed to swine. Hog cholera virus is only one of the swine disease-producing agents which can be disseminated in raw pork scraps in garbage.

Eventual Eradication

Since the virulent virus used in vaccinating and the virus which may be present in uncooked garbage are two of the chief sources of hog cholera and, since the recent country-wide epizootic of vesicular exanthema in swine resulted in most states requiring all commercial garbage be cooked before it is fed to swine, it would seem that the incidence of hog cholera in this country must decline if H.R. 5933 becomes effective. However, if the disease does decline, we must be doubly alert because experience has indicated that, with a decline, there is always a decrease in vaccination, leaving more susceptible herds in which cholera could rapidly spread should it reappear.

If the vaccine and garbage sources of hog cholera virus are eliminated, two giant steps toward eradication of the disease will have been taken. Whether cholera can be eradicated while the use of modified live virus vaccines is permitted remains to be seen. Experience in Europe indicates that when eradication is undertaken, it will be necessary to use only (1) anti-hog cholera serum alone for quick protection (passive immunity) and (2) the killed vaccines for active immunity.

It would seem imperative to now start an intensive study of means: (1) to insure a constantly available, adequate supply of serum to handle any emergency and (2) to require continued vaccination with killed vaccine until cholera is eradicated.

Time is running out for hog cholera in this country. Aggressive, unselfish leadership on the part of veterinarians at the "grass roots" can speed its departure.

ABSTRACTS

Hematology of Turkey Poults

The hematology of 9 uninfected turkeys, 5 to 8 weeks old, was studied and compared with the results of other investigators.

Of 12 turkeys inoculated with embryonated *Heterakis gallinae* ova to produce a Histomonas infection, 7 died from the disease, 1 recovered, and 4 showed no signs of infection.

Blood studies of the turkeys which later died from histomoniasis revealed a decrease in the total red blood cell (r.b.c.) count, hemoglobin, and white blood cell (w.b.c.) count. The heterophils increased while the lymphocytes decreased. Monocytes, eosinophils, and basophils remained within a normal range.

The turkey which recovered from the infection showed a decrease in the total r.b.c. count, hemoglobin, and total w.b.c. count and an increase in heterophils. All counts approached those of the control turkeys at the time of exsanguination except for the lymphocytes, where a lymphopenia persisted.

Four exposed turkeys showed no signs of infection but exhibited a slightly lower total r.b.c. count and hemoglobin content, and a more variable total w.b.c. count than the control birds. No apparent change in the differential counts of this group was observed.—[*Thomas D. Malewitz and M. Lois Calhoun: The Normal Hematological Picture of Turkey Poults and Blood Alterations Caused by Enterohepatitis. Am. J. Vet. Res., 18, (April, 1957): 369-399.*]

Results of Nematode Infections in Lambs

Lambs infected with *Haemonchus contortus, Nematodirus spathiger,* and *Trichostrongylus colubriformis* exhibited wide differences in susceptibility to acquisition and effects of these nematodes. Feed consumption decreased as the infections progressed. Weight losses were rapid. Water consumed per pound of lamb did not appreciably decrease until debility occurred. Moisture content of the feces varied with the type and severity of the infection, although fecal pH did not vary greatly. Hyperglycemias, with corresponding serum hypophosphotemias and depressions in total serum protein, took place in the blood of all infected lambs. Albumin-globulin ratios increased in all infected lambs. Digestibility of protein gradually diminished while digestibility of crude fiber fluctuated widely as the infections progressed. Blood hemoglobin and hematocrit values indicated severe Haemonchus infections in all except 1 infected animal from which no *H. contortus* were recovered upon necropsy. Differences in initial susceptibility to acquisition of the species used seemed to be inherent and probably species-specific.—[*R. F. Shumard, D. W. Bolin, and D. F. Eveleth: Physiological and Nutritional Changes in Lambs Infected with the Nematodes Haemonchus Contortus, Trichostrongylus Colubriformis, and Nematodirus Spathiger. Am. J. Vet. Res., 18, (April, 1956): 330-337.*]

FOREIGN ABSTRACTS

Similarity of Salmonella Gallinarum and Salmonella Pullorum

Usually the term "fowl typhoid" is used to describe a disease of adult chickens due to *Salmonella gallinarum.* "Pullorum disease" is used to describe a septicemia of embryos and chicks, due to *Salmonella pullorum.*

This distinction is erroneous. Septicemic conditions may be produced by either organism and chronic typhoid lesions are produced by both *gallinarum* and *pullorum* types.

When *S. gallinarum* and *S. pullorum* are studied serologically, it is found that both have identical serological antigens. All strains contain the 1, 1X, and X11 antigens; none of the strains contain X112 antigen.

Both organisms show considerable variation in fermentative reactions—*S. gallinarum* may be grouped into seven distinct classes and *S. pullorum* into nine classes.

Lysogenic studies show that both organisms are identical in their phage reactions.

Salmonella gallinarum and *S. pullorum* should be considered as one species—*Salmonella gallinarum-pullorum.*—[*P. Goret, L. Joubert, and J. Oudar: Invalidity of the Distinction Between Salmonella Gallinarum and Salmonella Pullorum. Biochemical Variants of These Organisms. Ann. Inst. Pasteur, 90,* (1956: 31-49.]—J. P. SCOTT.

BOOKS AND REPORTS

Symposium on Anthrax

The papers presented at a symposium on anthrax in man, at the University of Pennsylvania, Oct. 8, 1954, have been compiled in this 175-page, paper-bound booklet. The papers present a comprehensive picture of the disease in various parts of the world, a method for rapid isolation and identification of *Bacillus anthracis,* pathogenesis of the disease, and its treatment. Among the speakers were three veterinarians who discussed the incidence in animals, control of occupational anthrax, and attempts to prevent cutaneous anthrax. This book should be of value to veterinarians since "the ruminant is the most important reservoir of anthrax."—[*Symposium on Anthrax. Presented under the joint sponsorship of the Department of Health, Commonwealth of Pennsylvania; Department of Public Health, City of Philadelphia; and the School of Medicine, University of Pennsylvania. Hospital of the University of Pennsylvania, Philadelphia. 1956. Price not given.*]

THE NEWS

Lt. Col. Taylor Reassigned to Research Command

Lt. Col. Albert A. Taylor (WSC '37) was assigned on Jan. 18, 1957, to Headquarters Air Research and Development Command, in Baltimore, Md. Colonel Taylor's duties will be with the Aeromedical Branch of the Human Factors Division.

Lt. Col. Albert A. Taylor

For the past three and one half years, he has been stationed at the Aeromedical Laboratory of the Wright Air Development Center, Wright-Patterson Air Force Base, Ohio.

Colonel Taylor was graduated from Washington State College in 1937 with the B.S. and D.V.M. degrees. Prior to his assignment to the Wright Air Development Center in 1953, he attended Harvard University where he received a Master's degree in Veterinary Public Health.

Michigan State Acquires Beaudette Veterinary History Collection

The collection of old and rare books on veterinary medicine assembled by the late Dr. Fred R. Beaudette has been acquired for the Historical Library of the College of Veterinary Medicine, Michigan State University, East Lansing. Undoubtedly the most notable private collection of its kind in this country, together with present holdings, it will make the M.S.U. Veterinary Historical Library one of the outstanding collections in the English-speaking world. The Beaudette Collection, as it will continue to be known, consists of about 250 distinct works, of which six date to before 1500, another 19 to before 1600, and an additional 35 before 1700. Included are such items as the first strictly veterinary work ever printed (1489), and the first printed description of rabies in the dog (1492). Few such collections are so rich in early material. Including the Beaudette Collection, the M.S.U. Historical Library presently consists of over 400 distinct items, of which 80 date to before 1700.

Being located at a school where an active program of teaching, research, and writing in the area of the history of veterinary medicine is in progress, this collection will serve as a continuingly useful resource. A book to be published this spring, entitled "Evolution of the Veterinary Art," will be copiously illustrated with plates graciously supplied the author by Dr. Beaudette from his collection. In addition to being a repository for the significant works that form the background of veterinary medicine as such, the collection includes works from ancillary fields; thus, it may be anticipated that scholars interested in these aspects of the larger area of the history of civilization may find source materials here not readily available elsewhere. Rather than being buried in a vault, the Beaudette Collection, as well as the Historical Library as a whole, will be on display (behind glass) in the Veterinary Medicine Reading Room and will be open to qualified scholars.

s/J. F. SMITHCORS.

AMONG THE STATES AND PROVINCES

California

Southern California V.M.A.—The program for the March 20 meeting of the Southern California V.M.A. included a presentation by Dr. R. L. Rudy, Columbus, Ohio, on "Present Day Approaches to Hip Prosthesis" and a large animal panel with Drs. Mike Brennan and William Dakin serving as panel members.

Canada

Central Association.—The fifty-fourth annual meeting of the Central Canada Veterinary Association was held in Brockville, Ont., March 15-16, 1957.

Speakers included Drs. F. D. Horney, Guelph; R. J. McDonald, Woodstock; E. F. Pallister, Ottawa; N. M. Brown, Toronto; N. A. Fish, Guelph; Claude A. Smith, Washington, D. C.; W. L. MacPherson, Hull, Que.; and R. J. McClenaghan, Ottawa.

Dr. Charles A. Mitchell, president, Canadian Veterinary Medical Association, was the guest speaker at the banquet on Saturday evening.

Iowa

State Board Examination.—The Iowa Veterinary Medical Examining Board will hold examinations for the licensing of veterinarians on June 17-18, 1957. Applicants are asked to be in the office of the Division of Animal Industry, State House, Des Moines, not later than 8:00 a.m. on June 17.

For application forms and further information, write to H. U. Garrett, chief, Division of Animal Industry, Iowa Department of Agriculture, Des Moines 19, Iowa.

Massachusetts

State Board Examination.—The Massachusetts Board of Registration in Veterinary Medicine will hold examinations for registration in this state on June 27-29, 1957, at Amherst. The latest date for filing applications is June 20, 1957.

Address all inquiries to Dr. Ray S. Youmans, secretary, Board of Registration in Veterinary Medicine, Room 33, State House, Boston, Mass.

Missouri

Women's Auxiliary.—The Women's Auxiliary to the Missouri V.M.A. held its winter meeting on Feb. 16, 1957, at the Hotel Chase, St. Louis. President Mrs. A. W. Uren, Columbia, opened the meeting.

Mrs. Frank Booth, secretary of the AVMA Women's Auxiliary, gave an informative talk on affiliated auxiliaries. Mrs. Paul Spencer, Jefferson City, brought news from the national convention in San Antonio last October.

The Missouri Women's Auxiliary's main project is the student loan fund which now totals $800. Mrs. G. L. Murphy, president of the St. Louis Women's Auxiliary, announced additional donations of $75 from Dr. and Mrs. Allen Shotmaker and $25 from the St. Louis Auxiliary.

It was voted to give $15 to the Memorial Fund of the AVMA Women's Auxiliary in memory of Mrs. Guy Graham, of Kansas City, who was responsible for setting up this fund. It was also voted to give $10 to the AVMA Research Fund.

New officers for the coming year are: president, Mrs. J. L. McKitterick, Mexico; first vice-president, Mrs. L. L. Rice, Shelbina; second vice-president, Mrs. Paul Spencer, Jefferson City; secretary, Mrs. E. F. Damer, Hale; and treasurer, Mrs. Loren Kintner, Columbia.

Members of the St. Louis Auxiliary were competent and gracious hostesses.

s/MRS. L. L. RICE, *First Vice-President.*

New York

Beef Cattlemen's Short Course.—"Beef Cattle Health" was the principal subject for discussion at the sixth annual beef cattlemen's short course at Cornell University, Ithaca, N.Y., held during the week of Jan. 21, 1957.

Dean W. A. Hagan and co-workers from the School of Veterinary Medicine at Cornell appeared on the program, together with Mr. Charles E. Bell, Jr., Federal Extension Service, and Dr. W. S. Stone, New York State Department of Agriculture.

Sixty-nine men and women from 26 New York counties, seven states, and Canada attended.

Washington

Washington State College Holds Conference for Veterinarians.—The ninth annual conference for veterinarians, sponsored by the College of Veterinary Medicine, State College of Washington, Pullman, was held April 8-10, 1957.

Out-of-state speakers included Drs. R. Shope, New York; Carl Ecklund, Hamilton, Mont.; W. O. Brinker, East Lansing, Mich.; H. J. Hill, Fort Collins, Colo.; and Major U. S. Grant Kuhn, Oak Ridge, Tenn.

Closed-circuit television was employed for a number of demonstrations.

West Virginia

State Board Examinations—The West Virginia Veterinary Examining Board will hold its annual examination on June 13, 1957, at the Stonewall Jackson Hotel, Clarksburg.

Information and applications can be received by writing to Isaac H. Maxwell, secretary, Examining Board, Lost Creek, W. Va. All applications must be filed with the secretary ten days prior to examination.

Wisconsin

Veterinary Medical Examinations.—Wisconsin Veterinary Medical examinations will be held June 24-25, 1957. For applications and further information write to H. J. O'Connell, veterinary supervisor, State-Federal Cooperative Program, 6 W., State Capitol, Madison 2, Wis.

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FOREIGN NEWS

Venezuela

Rabies Training Course Held.—A regional rabies training course of two weeks' duration was held in Caracas, Venezuela, under the auspices of the Pan-American Sanitary Bureau, March 31-April 13, 1957.

Drs. Earl C. Chamberlayne, Washington, D.C.; Karl Habel, Bethesda, Md.; Aurelio Malaga-Alba, Mexico City, Mexico; and E. S. Tierkel, C.D.C., Atlanta, Ga., participated in the program.

Virgin Islands

Veterinary Medical Association Formed.—A recent letter from Dr. C. C. Crago (OSU '30) tells of the formation of the Virgin Islands Veterinary Medical Association on Feb. 6, 1957. Dr. L. A. Fahlund (MSU '40) is president and Dr. Crago is secretary-treasurer.

The Virgin Islands is a group of islands east of Puerto Rico, divided between Great Britain and the U. S., the former comprising a "presidency" of the Leeward Islands. The Virgin Islands of the United States is a group consisting of St. Thomas, St. Croix, and St. John, with some small islets; this formerly was a part of the Danish West Indies until purchased by the U. S. in 1916. The capitol is St. Thomas.

Dr. Crago speaks of the fine climate; says that St. Croix, where he is a part-time assistant to Dr. Fahlund, the federal veterinarian in charge of the Islands, is agricultural; has some 15,000 acres of sugar cane; about 12,000 head of cattle; and many sheep, goats, and horses. Because of easy plane travel from the States, many people are becoming interested in living in the Islands and there is presently considerable real estate and building activity.

U. S. GOVERNMENT

Veterinary Personnel Changes.—The following changes in the force of veterinarians in the U.S.D.A. are reported as of Feb. 28, 1957.

TRANSFERS

Charles E. Bardshar, from South St. Paul, Minn., to St. Cloud, Minn.
Theodore M. Beard, from Denver, Colo., to Rapid City, S. Dak.
Daniel R. Brensike, from South St. Paul, Minn., to Long Prairie, Minn.
William B. Buck, from Columbia, S. Car., to Greenville, S. Car.
William W. Canon, from DeQueen, Ark., to Batesville, Ark.
Donald D. Cress, from Fort Worth, Texas, to Dallas, Texas.
Irving A. Darling, from Oxford, Neb., to Nebraska City, Neb.
Alexander Don, from Berlin, Md., to Denton, Md.
Oren G. Eastep, from Worthington, Minn., to Shawnee, Okla.
Arthur F. Eckert, from San Francisco, Calif., to Los Angeles, Calif.
John J. Evans, Jr., from Terre Haute, Ind., to Ocala, Fla.
Thomas A. Gage, from Bismarck, N. Dak., to Washington, D.C.
Wynter C. Graber, from Chicago, Ill., to Nashville, Tenn.
John S. Gwaltney, from St. Louis, Mo., to Springfield, Ill.
William V. Hopkins, from Nashville, Tenn., to Fayetteville, Ark.
Charles J. Koerth, Jr., from Fort Worth, Texas, to Yakima, Wash.
Wolodymyr Kopacz, from Otisville, N. Y., to Camden, N. J.
John V. Lange, from Chicago, Ill., to Deshler, Ohio.
Pranas Lapatinskas, from Hemlock, Mich., to Chicago, Ill.
Michael Marmesh, from Ames, Iowa, to Live Oak, Fla.

RETIREMENTS

Frank A. Baldwin, St. Louis, Mo.
Russell S. Griffin, Yakima, Wash.
Fred O. Kieldsen, Los Angeles, Calif.
Angus D. MacDonald, Washington, D.C.
Clarence E. Mock, Nebraska City, Neb.
George C. Nugent, Jacksonville, Fla.
Clayton S. Palmer, Jacksonville, Fla.
Charles O. Williamson, Boise, Idaho.
Harry R. Gerts, St. Louis, Mo.
Harry T. Grossman, Detroit, Mich.
Fordyce H. Melvin, Salt Lake City, Utah.
William R. Scott, St. Louis, Mo.
Carman A. Towne, Rapid City, S. Dak.

DEATHS

Basil E. Robertson, Ocala, Fla.

STATE BOARD EXAMINATIONS

FLORIDA—June 17-19, 1957, Miami. E. L. Matthews, P.O. Box 141, Palatka, Fla., secretary.

IOWA—June 17-18, 1957, Des Moines. H. U. Garrett, chief, Division of Animal Industry, Iowa Department of Agriculture, Des Moines 19, Iowa.

MASSACHUSETTS—June 27-29, 1957, Amherst. Dr. Ray S. Youmans, secretary, Board of Registration in Veterinary Medicine, Room 33, State House, Boston, Mass.

NEW YORK—June 12-13, 1957. Practical examination, Ithaca. Mr. James O. Hoyle, secretary, 23 S. Pearl St., Albany. Week of July 8, 1957. Written examinations: New York City, Albany, Syracuse, Buffalo, Rochester.

NORTH CAROLINA—June 24-26, 1957. Asheville. Dr. James I. Cornwell, secretary, 65 Beverly Road, Beverly Hills, Asheville.

OHIO—June 4-5, 1957. Columbus. H. G. Geyer, Office of the Secretary Ex-Officio, Division of Animal Industry, Room 720, State Office Building, Columbus 15, Ohio.

OKLAHOMA—May 20-22, 1957, Stillwater. R. E. Henry, Oklahoma Board of Veterinary Medical Examiners, Oklahoma City, Okla., secretary.

SOUTH DAKOTA—June 24-25, 1957. Pierre, Glenn B. Rea, Livestock Sanitary Board, State Office Building, Pierre, S. Dak., secretary.

TENNESSEE—June 24-25, 1957. Nashville. Dr. W. O. Greene, secretary, State Office Bldg., Nashville.

TEXAS—June 3-4, 1957. College Station. Mr. T. D. Weaver, executive secretary, Texas State Board of Veterinary Medical Examiners, 207 Capital National Building, Austin 16, Texas.

WISCONSIN—June 24-25, 1957, Madison. H. J. O'Connell, veterinary supervisor, State-Federal Cooperative Program, 6 West, State Capitol, Madison 2, Wis.

WEST VIRGINIA—June 13, 1957, Clarksburg. Isaac H. Maxwell, secretary, Examining Board, Lost Creek, W. Va.

DEATHS

Star indicates member of AVMA

★**Albert R. Greenwood** (COR '50), 36, Los Banos, Calif., died Feb. 4, 1957. Dr. Greenwood was a member of the AVMA.

B. E. Robertson (STJ '17), 64, Ocala, Fla., died on Jan. 17, 1957. Dr. Robertson had been a member of the AVMA.

He is survived by his widow and one son.

★**Fred E. Rugger** (ONT '14), 66, Oxford, Iowa, died on Jan. 31, 1957, of a heart attack. Dr. Rugger was a member of the AVMA and the Iowa State Veterinary Medical Association.

He is survived by his widow, two daughters, three sons, and a brother.

George R. White (C '97), 82, Nashville, Tenn., died March 1, 1957, following an extended illness. Dr. White was treasurer of the AVMA from 1905 to 1915.

He is survived by a son, a daughter, and three sisters.

ORGANIZATION SECTION

Ninety-Fourth Annual Convention
Cleveland—August 19-22

Roads and Rails to Cleveland

The four completed toll roads and five railways serving Cleveland offer convenient connections with transportation facilities from all over the United States and Canada. Many of the routes followed by the trains and highways provide vacation opportunities for the family enroute to or from the Convention. Future issues of the JOURNAL will contain facts about Cleveland, the State of Ohio, and air and ship transportation to the convention city.

Turnpikes and Toll Roads

New Jersey, Pennsylvania, Ohio, and Indiana have completed their portions of an east-west highway which passes 12 miles south of Cleveland, providing a minimum of two lanes in each direction from New York to south Chicago. A toll is required for the use of these highways, but the cost is low compared to the advantages these freeways offer. Lanes do not cross or intersect the roads and a speed of 55 to 65 miles can be maintained with safety. Auto service and restaurant facilities are spaced at 20- or 30-mile intervals along the route.

Each service stop offers coffee shops with carry-out service, dining rooms for leisurely eating, gasoline stations, gift shops, rest rooms, and picnic areas. The four states maintain a constant patrol of the toll roads to provide emergency aid and enforce safety rules.

Tolls

Tolls for the Turnpike systems have been established by each state. From the east, costs from the beginning of the New Jersey Turnpike at the George Washington Bridge in New York City to the Pennsylvania Turnpike entrance are $1.65. Through Pennsylvania to Eastgate on the Pennsylvania Turnpike-Ohio border is $3.80 and from Eastgate, Ohio, to the Cleveland turnoff costs $0.85. Tolls from the east to Cleveland total $6.30.

From the west, entering the Indiana Toll Road at 115th and Blue Island Ave. on Chicago's south side to Montpelier (Ind.) on the Indiana-Ohio border costs $1.95. From Montpelier to Cleveland, the toll is $2. Tolls from Chicago to Cleveland are $3.95.

The New Jersey Turnpike connects on the north with the New York State freeway and on the south with routes 40 and 13 coming up from Baltimore and the eastern seaboard. Toll from Delaware Memorial Bridge at the south end of the New Jersey highway to the Pennsylvania Turnpike is $0.80.

Pennsylvania Turnpike

Railroads

The New York Central System has a number of trains serving Cleveland directly from Detroit, Chicago, St. Louis, Indianapolis, Cincinnati, Pittsburgh, New York, Boston, Montreal, and Buffalo. The Missouri Pacific, Santa Fe, and K.T. trains meet the N.Y. Central at St. Louis; Union Pacific, Burlington, Rock Island, Northern Pacific, and Milwaukee roads meet at Pittsburgh or Cincinnati; New England lines connect at Troy, N.Y.; Canadian lines connect with the New York Central System at Ottawa, Montreal, and Detroit.

The Nickel Plate Road has convenient, overnight pullman service, and daylight coach service to Cleveland from New York, New Jersey, and Chicago and overnight service from St. Louis. Family plan fares are available every day of the week, enabling one parent and children under 21 to travel the round trip at the one-way rate, the other parent paying full fare.

The Baltimore & Ohio offers several daily trains from Washington and Baltimore to Cleveland and via Harrisburg and Pittsburgh. An overnight train also serves Cleveland from Washington.

The Erie Railroad Company's main line does not serve Cleveland directly from Chicago or New York. *The Lake Cities,* leaving New York in the evening and reaching Cleveland the following midmorning, carries through-coaches to Cleveland but pullman cars and a diner go only to Youngstown, Ohio. Two trains, *Morning Steel King* and *Evening Steel King,* serve Cleveland from Pittsburgh.

The Pennsylvania Railroad does not serve Cleveland from a main line between Chicago and New York. It does, however, serve Cleveland from New York, Washington, D.C., and Pittsburgh.

STUDENT CHAPTER ACTIVITIES

California

California Student Chapter.—The first meeting of the fall semester was held Oct. 3, 1956. The speaker for the evening was Dr. W. S. Cripe, general practitioner and graduate of this school "Class of 52." Dr. Cripe gave an interesting example of his typical day.

At the Nov. 7, 1956, meeting, president Roy Mason gave a report on his trip to the AVMA convention. Bill Priester, Bill Culler, and Hubbert Johnstone described their experiences and the advantages of the veterinarian trainee program.

The speaker for the Dec. 6, 1956, meeting was Dr. Seymour Roberts, well-known veterinary ophthalmologist, who gave an informative discussion on glaucoma in small animal practice. Nominations for officers for the spring semester were held.

At the meeting held Jan. 2, 1957, Dr. Hal Parker spoke on the various aspects of mixed practice.

s/W. A. MARSDEN, *Secretary.*

Texas

Texas A. & M. College Student Chapter.—There were six meetings of the Texas A. & M. College Student Chapter to the AVMA this past semester, the first of which was held Sept. 25, 1956, in the Memorial Student Center, with 196 chapter members and prospective first-year student members attending. This meeting was for the benefit of welcoming these

One of the Erie Railroad's Trains on Its Way from the East to Cleveland

students into veterinary school and also for introducing them to our chapter.

Dr. Morris Erdheim, the guest speaker at our meeting held on Oct. 2, 1956, gave an interesting informal discussion concerning the importance of the veterinarian in the practical nutrition of farm animals.

Prior to the opening of the National Convention in San Antonio, the chapter had a program for the visiting student delegates from the various veterinary colleges on Oct. 14, 1956. The visiting delegates participated in a box lunch at noon, a tour of the campus and veterinary school, and a banquet that evening welcoming them to Texas.

The role of the veterinarian in the livestock industry was the subject of guest speaker Mr. C. J. Scruggs, associate editor, *Progressive Farmer,* and secretary of the Texas Animal Health Council, at the meeting held Nov. 20, 1956. Wallace Kleb was the recipient of the Borden Award presented by Dean W. W. Armistead.

On Dec. 11, 1956, Dr. Hardy A. Kemp, College of Medicine, Baylor University, gave a talk stressing the importance of the veterinarian in public health work.

Officers elected for the spring term are James Forgason, president; Charles Wilson, president-elect; John La Croix, vice-president; and Billy Bob Dunn, secretary-treasurer.

APPLICATIONS

Applicants—Members of Constituent Associations

In accordance with paragraph (b) of Section 2, Article X, of the Administrative Bylaws, as revised at the annual meeting of the House of Representatives, Aug. 18, 1951, in Milwaukee, Wis., the names of applicants residing within the jurisdictional limits of the constituent associations shall be published once in the JOURNAL.

The following applicants have been certified as members of the constituent association that has jurisdiction over the area in which the applicant resides. The certification was made by the secretary of the constituent association in accordance with Section 2, Article X, of the Administrative Bylaws.

FARQUHARSON, WM. BRUCE
9235 N. 14th Ave., Sunnyslope, Ariz.
D.V.M., Colorado A. & M. College, 1952.

FIELD, CHARLES W., Jr.
P. O. Box 477, Hialeah, Fla.
D.V.M., Alabama Polytechnic Institute, 1950.

KREIER, JULIUS P.
108 E. Armory Ave., Champaign, Ill.
V.M.D., University of Pennsylvania, 1953.

LESECKAS, JUOZAS
12333 S. Halsted St., Chicago, Ill.
D.V.M., Veterinary College of Vienna, 1935.

MAURER, BEN P.
P.O. Box 344, Escondido, Calif.
D.V.M., Colorado A. & M. College, 1952.

McGLAMERY, CONRAD E.
811 N. Longfellow Ave., Tucson, Ariz.
D.V.M., University of California, 1954.

STINSON, WILLIAM JAMES
32 Gore W., Perth, Ont.
D.V.M., Ontario Veterinary College, 1940.

SWYSCHUK, GEORGE S.
3862 Botanical Ave., St. Louis, Mo.
D.V.M., University of Leipzig, 1945, and University of Munich, Germany, 1955.

SZILVASSY, RUDOLPH E.
6328 2nd N.W., Albuquerque, N. M.
D.V.M., Royal Hungarian Veterinary College, 1939.

Applicants—Not Members of Constituent Associations

In accordance with paragraph (b) of Section 2, Article X, of the Administrative Bylaws, as revised at the annual meeting of the House of Representatives, Aug. 18, 1951, in Milwaukee, Wis., notice of all applications from applicants residing outside of the jurisdictional limits of the constituent associations, and members of the Armed Forces, shall be published in the JOURNAL for two successive months. The first notice shall give the applicant's full name, school, and year of graduation, post office address, and names of his endorsers.

First Listing

GARLICK, GORDON K.
American Embassy, A.P.O. 74, Box K c/o Postmaster, San Francisco, Calif.
D.V.M., State College of Washington, 1944.
Vouchers: E. C. Stone and Roger Spencer.

VILLEGAS, MIGUEL
Calle 3a No. 17, Campo Alegre, Caracas, Venezuela.
D.V.M., University Central of Venezuela, 1955.
Vouchers: C. R. Martinez and C. E. Muskus.

AVMA Film Library—Additions

Dynamics of the Tubercle: in Vivo Observation of Pathogenesis and Effects of Chemotherapy in the Clark Rabbit Ear Chamber

	Running time	Produced by Churchill Wexler	
16. mm.	28 min.	Productions, Los Angeles, and	
Sound	Color	Chas. Pfizer & Company	$3.00

This is a teaching film demonstrating the effect of the introduction of disease in normal tissue and the results when therapeutic agents are employed. The early part of the film explains normal circulation in the rabbit ear and describes in detail progressive changes in the normal vessels, blood cells, and connective tissue after the introduction of the tuberculosis organisms in a primary infection and, also, the development of the tubercle in reinfection tuberculosis. The latter part of the film shows the effects of chemotherapy on the tubercle.

This is an excellent teaching film for histology, physiology, and pathology, since it demonstrates normal tissue and its reaction to infective agents.

This film should be used, not only in all veterinary colleges, but should also be of interest to practitioners. It is not recommended for lay viewing.

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2

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GRAFTON, WISCONSIN

U. S. A.

Psoroptic Sheep and Cattle Scabies

	Color:	Produced by	
16 mm.	Running time	U.S.D.A.	Rental
Sound	12 min.	Washington, D. C.	$2.50

This film describes the history of the diseases in the United States, showing symptoms in cattle and sheep affected with psoroptic scabies, loss of wool and hair, evidence of itching and irritation, and demonstration of causative mites, including photomicrography of the mite. Methods of treating infected and exposed animals are also shown, and the principles of sound scabies-eradication procedures are outlined. This film is recommended for professional and lay audiences.

Available from Other Sources—Film Additions

Administration of Avenol

		Produced and available from
	Black and white:	Imperial Chemical Industries,
16 mm.	Running time	Ltd., 488 Madison Ave., New
Sound	8 min.	York 22, N. Y.

This is a British film for instructing veterinary surgeons and students in the technique of administrating Anavenol. It shows the anesthestizing of a cow, with emphasis on the advantages of the drug compared with other anesthestics. The ease of administration, rapid recovery, absence of struggling, and apparent safety are emphasized. It suggests that Anavenol, in addition to its uses in major surgery, has a place simply as a means of restraining animals for relatively minor operations.

While the film is commercial in nature, it should be of interest to those desiring information on products having anesthetic properties.

Speaking of Hounds

	Color:		Available from Gaines Dog Research Center,
16 mm.	Running time	Produced by Gaines Dog	250 Park Ave., New York
Sound	27 min.	Research Center	17, N. Y.

This film depicts the use of hounds in the field. The film starts out with the use of the Bloodhound and a description of the breed, and it portrays the use of the Basset Hound, the Redbone Coonhound, the Beagle Hound, and the Foxhound. The photography and color are excellent and most viewers, particularly if they are hunters, will enjoy the excitement and pleasure of hunting with hounds.

This film is well suited to show before audiences such as service clubs and others interested in recreational activities.

Functional Anatomy of the Reproductive Tract of the Cow

	Color:		Available from Visual
	Running time	Produced by Film	Instruction Service,
16 mm.	56 min.	Production Unit,	Iowa State College,
Sound	(2 reels)	Iowa State College	Ames, Iowa

The title of this film indicates what it depicts but does not reveal the comprehensive, detailed manner in which it is presented. The pictures and synchronized sound track show and discuss in detail the structures and their relationships. The microscopic structure of the various reproductive organs is shown. The use of original drawings as well as motion pictures of the actual dissection tends to simplify the complex anatomical arrangements.

Part I, 20 minutes, running time, deals entirely with the detailed anatomical relationships. This portion of the film should be extremely helpful for teaching anatomy to first-year students in colleges of veterinary medicine.

Part II, running time 35 minutes, deals more with the practical aspects of reproductive anatomy. Included are pictures of semen deposition as practiced in artificial insemination, the development and extirpation of corpora lutea, and the changes occurring in the pregnant uteri. Fetuses in various stages of development, including the placental membranes, are clearly shown. Part II should be valuable to students studying bovine obstetrics and to practitioners who have need for review of the anatomy of the reproductive organs.

Anatomy departments in schools of veterinary medicine should find this film a "must" for

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their teaching. The veterinarian whose practice includes bovine obstetrics and fertility problems will find it extremely helpful.

Trimar Anesthesia for Cats

	Color:	Produced by Ohio	Available from Ohio Chemical and Surgical
16 mm.	Running time	Chemical and Surgical	Co., 1400 E. Washington
Silent	18 min.	Equipment Co.	Ave., Madison 10, Wis.

This film is intended to familiarize veterinary practitioners with equipment and an anesthetic agent available for use on cats.

The film is not well titled and, since it is a silent film, the viewer will have difficulty in following all steps of the procedures illustrated.

Two surgical procedures are shown and while the film is not intended as a surgical teaching film, most viewers will approve of the techniques shown. The effectiveness of the anesthesia is apparent.

Recommended for veterinary audiences only.

Applied Anatomy as Related to Pudendal Nerve Block Anesthesia in the Bull

	Color:	Produced by Drs. Robert Getty and	Available from Visual Instruction Service,
16 mm.	Running time	John Bowne, Iowa	Iowa State College,
Sound	18 min.	State College	Ames, Iowa

Two methods (Iowa and Minnesota) of blocking the pudendal nerve in the bull are demonstrated and thoroughly discussed. The need for relaxation of the muscles to the penis to facilitate its examination is emphasized.

The landmarks are pointed out on the living animal and on dissected cadavers. The relations of the various structures are shown in carefully dissected specimens. The nerve-blocking techniques are shown.

The film should be an excellent aid in teaching veterinary students. It is designed for professional viewing.

Applied Anatomy as Related to Nerve Blocks for Anesthesia of the Bovine Horn and Bovine Eye

	Color:	Produced by Drs. Robert Getty and	Available from Visual Instruction Service,
Sound	Running time	John Bowne, Iowa	Iowa State College,
16 mm.	15 min.	State College	Ames, Iowa

The film consists of two parts on a single reel. The structures invaded and the landmarks used in placing the needle to anesthetize the bovine horn or eye are shown. The procedures are first demonstrated on the intact animal. The visible landmarks used are pointed out. Dissections showing the relation of deeper structures to the needle are then presented and thoroughly discussed.

The excellent demonstrations and thorough discussions will not only serve to review the structures but will tend to make the veterinary student and, of course, the veterinarian appreciate the application of anatomy to a clinical procedure.

The film was made for presentation to professional audiences.

Applied Anatomy as Related to Paralumbar Block in the Bovine

	Color:	Produced by Drs. Robert	Available from Visual Instruction Service,
16 mm.	Running time	Getty and John Bowne,	Iowa State College,
Sound	15 min.	Iowa State College	Ames, Iowa

The anatomy involved in paralumbar anesthesia in cattle is shown by means of excellent dissections photographed in color. The structures are exposed in a series of dissections of the superficial and the deeper areas. The relations of the various tissues and organs to each other and to the needle are pointed out. Clinical applications of the nerve block are emphasized.

The film provides an excellent means of study and review for the busy practitioner, the clinician, and the veterinary student. It is designed for professional audiences.

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COMING MEETINGS

Eastern Iowa Veterinary Association. Annual practitioners all-day clinic. Hawkeye Downs, Cedar Rapids, May 14, 1957. F. E. Brutsman, Traer, Iowa, secretary.

Kansas State College. Conference for veterinarians. School of Veterinary Medicine, Manhattan, May 26-28, 1957. E. E. Leasure, dean.

Texas A. & M. College. Conference for veterinarians. Texas A. & M. College, College Station, June 6-7, 1957. R. D. Turk, chairman.

Wyoming Veterinary Medical Association. Annual meeting. Lander, June 15-17, 1957. J. F. Ryff, P. O. Box 960, Laramie, Wyo., secretary.

North Dakota Veterinary Medical Association. Annual meeting. Minot, N. Dak., June 17-18, 1957. Dean Flagg. 202 Teton Ave., Bismarck, N. Dak., secretary.

California State Veterinary Medical Association. Annual convention. Hotel Miramar, Santa Barbara, June 17-19, 1957. Charles S. Travers, 3004 16th St., San Francisco, Calif., secretary.

Idaho Veterinary Medical Association. Summer meeting. McCall, June 20-22, 1957. A. P. Schneider, 3025 N. Twenty-Third St., Boise, Idaho, secretary.

South Carolina Associations of Veterinarians. Summer convention. Fort Sumter Hotel, Charleston, June 20-22. Worth Lanier, York, S. Car., secretary.

Alberta Veterinary Medical Association. Annual convention, Lethbridge, Alta., June 21-22, 1957. H. C. Carlson, 9324 148th St., Edmonton, Alta., secretary.

Georgia Veterinary Medical Association. Annual meeting. Athens, June 23-25, 1957. C. C. Rife, 505 Lindbergh Drive, N. E., Atlanta 5, Ga., secretary.

Utah Veterinary Medical Association. Annual meeting. Logan, June 25-26, 1957. J. A. Thomas, P. O. Box 592, Provo, Utah, secretary.

Maritime Veterinary Association. Joint conference. Mount Allison University, Sackville, N. B., June 25-27, 1957. J. F. Frank, Division of Animal Pathology, Box 310, Sackville, N. B., chairman.

North Carolina Veterinary Medical Association. Annual meeting. Grove Park, Asheville, June 25-27, 1957. C. J. Lange, 3741 High Point Rd., Greensboro, N. Car., secretary.

Michigan State Veterinary Medical Association. Annual meeting. Leland Hotel, Detroit, June 26-27, 1957. Paul V. Howard, 4011 Hunsberger, N. E., Grand Rapids 5, Mich., secretary.

Maryland State Veterinary Medical Association. George Washington Hotel, Ocean City, June 27-28, 1957. John D. Gadd, Cockeysville, Md., secretary.

Montana Veterinary Medical Association. Summer meeting. Billings, June 28-30, 1957. G. A. Morrison, 316 Central Ave., Great Falls, Mont., secretary.

Kentucky Veterinary Medical Association. Annual meeting. Brown Hotel, Louisville, July 15-16, 1957. Robert H. Singer, 136 Shawnee Place, Lexington, Ky.

Iowa State College. Annual conference for veterinarians. Memorial Union, Ames, July 16-17, 1957. M. S. Hofstad, Veterinary Research Institute, Iowa State College, Ames, program chairman.

Canadian Veterinary Medical Association. Annual meeting. Hotel Georgia, Vancouver, B. C., July 22-24, 1957. James Archibald, Ontario Veterinary College, Guelph, Ont., vice-president.

American Veterinary Medical Association. Annual meeting. Cleveland Auditorium, Cleveland, Ohio, Aug. 19-22, 1957. J. G. Hardenbergh, 600 S. Michigan Ave., Chicago 5, Ill., executive secretary.

Washington State Veterinary Medical Association. Annual meeting. Monticello Hotel, Longview, Sept. 9-10, 1957. William F. Harris, 1102 E. Main St., Puyallup, Wash., secretary.

New York State Veterinary Medical Society. Annual meeting. Hotel Statler, Buffalo, Sept. 11-13, 1957. M. H. Covert, 138 Inglewood Dr., Rochester 19, N. Y., secretary.

New England Veterinary Medical Association. Annual meeting. Equinox House, Manchester, Vt., Oct. 6-9, 1957. C. Lawrence Blakely, 180 Longwood Ave., Boston, Mass., secretary.

Florida State Veterinary Medical Association. Annual meeting. Fort Harrison Hotel, Clearwater, Oct. 13-15, 1957. Robert P. Knowles, 2934 N.W. 17th Ave., Miami 37, Fla., secretary.

Eastern Iowa Veterinary Association. Annual meeting. Hotel Sheraton-Montrose, Cedar Rapids, Oct. 17-18, 1957. F. E. Brutsman, Traer, Iowa, secretary.

Southern Veterinary Medical Association. Annual meeting. Hotel Roanoke, Roanoke, Va., Oct. 27-30, 1957. A. A. Husman, P. O. Box 91, Raleigh, N. Car., secretary.

Cornell University. Nutrition conference. Cornell University, Ithaca, N.Y., Oct. 31-Nov. 1, 1957. J. K. Loosli, Stocking Hall, Cornell University, Ithaca, N.Y., chairman.

Foreign Meetings

British Veterinary Association. Annual congress. University of Cambridge, Cambridge, England, Aug. 25-31, 1957. Mr. F. Knight, 7, Mansfield St., Portland Place, London, W. 1, general secretary.

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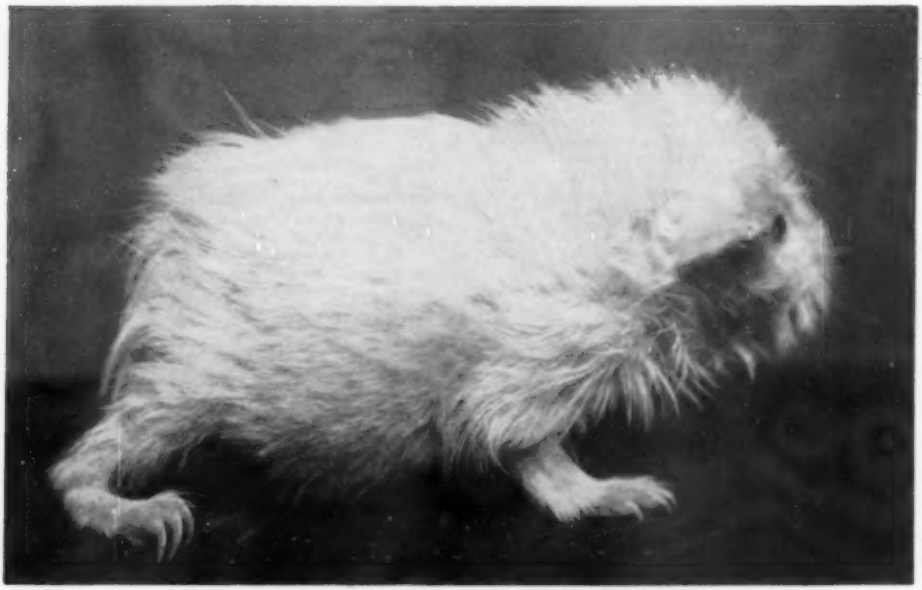

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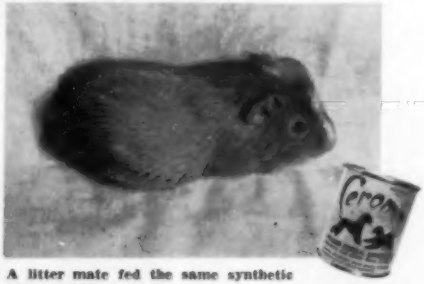

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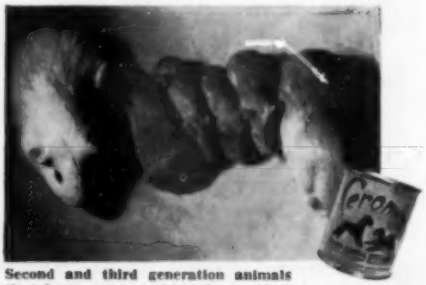

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Regularly Scheduled Meetings

ALABAMA—Central Alabama Veterinary Association, the first Thursday of each month. B. M. Lauderdale, Montgomery, secretary.

Jefferson County Veterinary Medical Association, the second Thursday of each month. S. A. Price, 213 N. 15th St., Birmingham, secretary.

Mobile-Baldwin Veterinary Medical Association, the first Tuesday of each month. W. David Gross, 771 Holcombe Ave., Mobile, Ala., secretary.

ARIZONA—Central Arizona Veterinary Medical Association, the second Tuesday of each month. Keith T. Maddy, Phoenix, Ariz., secretary.

Southern Arizona Veterinary Medical Association, the third Wednesday of each month at 7:30 p.m. E. T. Anderson, Rt. 2. Box 697, Tucson, Ariz., secretary.

CALIFORNIA—Alameda Contra Costa Veterinary Medical Association, last Wednesday of each month. Leo Goldson, 3793 Broadway, Oakland 11, Calif., secretary.

Bay Counties Veterinary Medical Association, the second Tuesday of each month. E. Paul, Redwood City, Calif., secretary.

Central California Veterinary Medical Association, the fourth Tuesday of each month. R. B. Barsaleau, 2333 E. Mineral King, Visalia, Calif., secretary.

Kern County Veterinary Medical Association, the first Thursday evening of each month. A. L. Irwin, 301 Taft Highway, Bakersfield, Calif., secretary.

Mid-Coast Veterinary Medical Association, the first Thursday of every even month. W. H. Rockey, P. O. Box 121, San Luis Obispo, Calif., secretary.

Monterey Bay Area Veterinary Medical Association, the third Wednesday of each month. Lewis J. Campbell, 90 Corral de Tierra, Salinas, Calif., secretary.

North San Joaquin Valley Veterinary Medical Association, the fourth Wednesday of each month at the Hotel Covell, in Modesto, Calif. Lyle A. Baker, Turlock, Calif., secretary.

Orange Belt Veterinary Medical Association, the second Monday of each month. Chester A. Maeda, 766 E. Highland Ave., San Bernardino, Calif., secretary.

Orange County Veterinary Medical Association, the third Thursday of each month. Donald E. Lind, 2643 N. Main St., Santa Ana, Calif., secretary.

Peninsula Veterinary Medical Association, the third Monday of each month. T. D. Harris, San Mateo, Calif., secretary.

Redwood Empire Veterinary Medical Association, the third Thursday of each month. Robert E. Clark, Napa, Calif., secretary.

Sacramento Valley Veterinary Medical Association, the second Wednesday of each month. W. E. Steinmetz, 4227 Freeport Blvd., Sacramento, Calif., secretary.

San Diego County Veterinary Medical Association, the fourth Tuesday of each month. H. R. Rossoll, 1795 Moore St., San Diego, Calif., secretary.

San Fernando Valley Veterinary Medical Association, the second Friday of each month at the Casa Escobar Restaurant in Studio City. John Chudacoff, 7912 Sepulveda Blvd., Van Nuys, secretary.

Santa Clara Valley Veterinary Association, the fourth Tuesday of each month. Kay Beulley, N. Fourth and Gish Rd., San Jose, Calif., secretary.

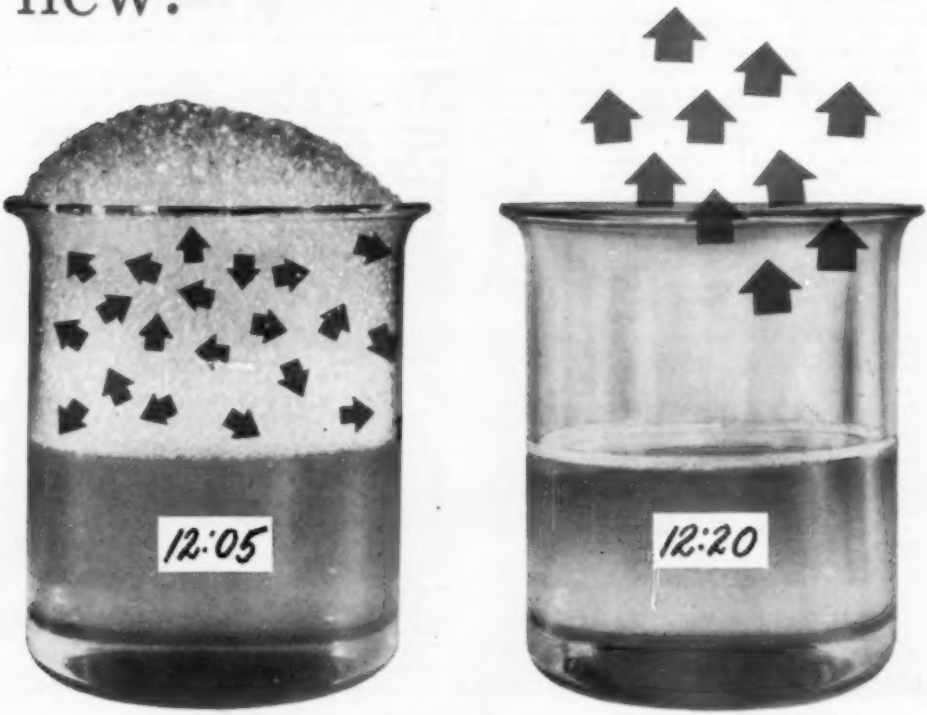
Southern California Veterinary Medical Association, the last Wednesday of each month. Don Mahan, 1919 Wilshire Blvd., Los Angeles 57, Calif., executive secretary.

Tulare County Veterinarians, the second Thursday of each month. R. B. Barsaleau, 2333 E. Mineral King, Visalia, Calif., secretary.

COLORADO—Denver Area Veterinary Society, the fourth Tuesday of every month. Richard C. Tolley, 5060 S. Broadway St., Englewood, Colo., secretary.

Northern Colorado Veterinary Medical Society, the first Monday of each month. M. A. Hammarlund, School of

new!



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BREAKS THE FROTHY MASS . . . releases gases entrapped in froth in three to six minutes . . . prompt deflation in 15-30 minutes through normal eructation . . . or if necessary, obtain faster relief through trocharization or stomach tube, even in frothy bloat.

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Veterinary Medicine, Colorado A. & M. College, Fort Collins, Colo., secretary.

DELAWARE—New Castle County Veterinary Association, the first Tuesday of each month at 9:00 p.m. in the Hotel Rodney, Wilmington, Del. E. J. Hathaway, Clifton Park Manor, Apt. 73-5, Wilmington 2, Del., secretary.

FLORIDA—Central Florida Veterinary Medical Association, the first Tuesday of each month, time and place specified monthly. Jack H. McElyer, 5925 Edgewater Drive, Orlando, Fla., secretary.

Jacksonville Veterinary Medical Association, the first Thursday of every month. Dodsons Restaurant. P. S. Roy, 4443 Atlantic Blvd., Jacksonville, Fla., secretary.

Northwest Florida Veterinary Medical Society, third Wednesday of each month, time and place specified monthly. Harold A. Tennant, Atmore, Ala., secretary.

Palm Beach Veterinary Society, the last Thursday of each month in the county office building at 810 Datura St., West Palm Beach. Ross E. Evans, 5215 S. Dixie Highway, West Palm Beach, Fla., secretary.

Ridge Veterinary Medical Association, the fourth Thursday of each month in Bartow, Fla. Paul J. Myers, Winter Haven, Fla., secretary.

South Florida Veterinary Society, the third Tuesday of each month, at the Seven Seas Restaurant, Miami, Fla. E. D. Stoddard, 6432 S. W. 8th St., Miami, Fla., secretary.

Suwannee Valley Veterinary Association, the fourth Tuesday of each month, Hotel Thomas, Gainesville. W. B. Martin, Jr., 3002 N. W. 6th St., Gainesville, Fla., secretary.

Volusia County Veterinary Medical Association, the fourth Thursday of each month. A. E. Hixon, 131 Mary St., Daytona Beach, Fla., secretary.

GEORGIA—Atlanta Veterinary Society, the second Tuesday of every month at the Elks Home on Peachtree St., Atlanta, Ga. J. L. Christopher, Smyrna, Ga., secretary.

ILLINOIS—Chicago Veterinary Medical Association, the second Tuesday of each month. Mark E. Davenport, Jr., 215 S. Edgewood Ave., LaGrange, Ill., secretary.

Eastern Illinois Veterinary Medical Association, the first Thursday of March, June, September, and December. A one-day clinic is held in May. H. S. Bryan, College of Veterinary Medicine, University of Illinois, Urbana, secretary.

INDIANA—Central Indiana Veterinary Medical Association, the second Wednesday of each month. Peter Johnson, Jr., 4410 N. Keystone Ave., Indianapolis 5, secretary.

Michiana Veterinary Medical Association, the second Thursday of every month except July and December, at the Hotel LaSalle, South Bend, Ind. J. M. Carter, 3421 S. Main St., Elkhart, Ind., secretary.

Tenth District Veterinary Medical Association, the third Thursday of each month. J. S. Baker, P. O. Box 52, Pendleton, Ind., secretary.

IOWA—Cedar Valley Veterinary Association, the second Monday of each month, except January, July, August, and October, at Black's Tea Room, Waterloo, Iowa. H. V. Henderson, Reinbeck, Iowa, secretary.

Coon Valley Veterinary Association, the second Wednesday of each month, September through May, at the Bradford Hotel, Storm Lake, Iowa. D. I. Lee, Sac City, Iowa, secretary.

East Central Iowa Veterinary Medical Society, the second Tuesday of every month. Dr. W. T. Rugger, Oxford, secretary.

Fayette County Veterinary Association, the third Tuesday of each month, except in July and August, at Pa and Ma's Restaurant, West Union, Iowa. Donald E. Moore, Box 178, Decorah, Iowa, secretary.

Northeast Iowa-Southern Minnesota Veterinary Association, the first Tuesday of February, May, August, and November at the Winneslick Hotel, Decorah, Iowa. 6:30 p.m. Donald E. Moore, Box 178, Decorah, Iowa, secretary.

KENTUCKY—Central Kentucky Veterinary Medical Association, the first Wednesday of each month. L. S. Shirrell, Versailles Rd., Frankfort, secretary.

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in diarrheas of animals, ***both*** *anticholinergic and antibacterial*

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the first Wednesday evening of each month in Louisville or within a radius of 50 miles. W. E. Bewley, P.O. Box "H," Crestwood, secretary.

MARYLAND—Baltimore City Veterinary Medical Association, the second Thursday of each month, September through May (except December), at 9:00 p.m. at the Park Plaza Hotel, Charles and Madison St., Baltimore, Md. Harry L. Schultz, Jr., 9011 Harford Rd., Baltimore, Md., secretary.

MICHIGAN—Mid-State Veterinary Medical Association, the fourth Thursday of each month with the exception of November and December. Robert E. Kader, 5034 Armstrong Rd., Lansing 17, Mich., secretary.

Saginaw Valley Veterinary Medical Association, the last Wednesday of each month. S. Correll, Rt. 1, Midland, Mich., secretary.

Southeastern Veterinary Medical Association, the fourth Wednesday of every month, September through May. Gilbert Meyer, 14003 E. Seven Mile Rd., Detroit 5, Mich., secretary.

MISSOURI—Greater St. Louis Veterinary Medical Association, the first Friday of the month (except July and August) at the Sheraton Hotel, Spring Ave. and Lindell Blvd. Allen B. Shopmaker, 136 N. Meramec, Clayton 5, Mo., secretary.

Kansas City Small Animal Hospital Association, the first Monday of each month, at alternating hospitals. W. F. Noland, 7504 Metcalf, Overland Park, Kan., secretary.

Kansas City Veterinary Medical Association, the third Tuesday of each month at Exchange Hall, ninth floor, Livestock Exchange Bldg., 1600 Genesee St., Kansas City, Mo. Busch Meredith, 800 Woodswether Rd., Kansas City 5, Mo., secretary.

NEW JERSEY—Central New Jersey Veterinary Medical Association, the second Thursday of November, January, March, and May at Old Hights Inn, Highstown, N. J. David C. Tudor, Cranbury, N. J., secretary.

Metropolitan New Jersey Veterinary Medical Association, the third Wednesday evening of each month from October through April at the Academy of Medicine, 91 Lincoln Park South, Newark, N. J. Myron S. Arlein, 2172 Milburn Ave., Maplewood, N. J., secretary.

Northern New Jersey Veterinary Association, the fourth Tuesday of each month at the Casa Mana in Teaneck. James R. Tanzola, Upper Saddle River, secretary.

Northwest Jersey Veterinary Society, the third Wednesday of every odd month. F. B. Duke, 49 Taylor St., High Bridge, N. J., secretary.

Southern New Jersey Veterinary Medical Association, the third Tuesday of each month at the Collingswood Veterinary Hospital, Collingswood. W. E. Snyder, E. Kings Highway and Munn Ave., Haddonfield, secretary.

NEW YORK—New York City, Inc., Veterinary Medical Association of, the first Wednesday of each month at the New York Academy of Sciences, 2 East 63rd St., New York City. C. E. DeCamp, 43 West 61st St., New York 23, N. Y., secretary.

New York State Veterinary College. Annual conference for veterinarians. Cornell University, Ithaca. W. A. Hagan, New York State Veterinary College, Cornell University, Ithaca, N. Y., dean.

Monroe County Veterinary Medical Association, the first Thursday of even-numbered months except August. Irwin Bircher, 50 University Ave., Rochester, N. Y., secretary.

NORTH CAROLINA—Central Carolina Veterinary Medical Association, the second Wednesday of each month at 7:00 p.m. in the O'Henry Hotel, Greensboro. Joseph A. Lombardo, 411 Woodlawn Ave., Greensboro, secretary.

Eastern North Carolina Veterinary Medical Association, the first Friday of each month, time and place specified monthly. Byron H. Brow, Box 453, Goldsboro, N. Car., secretary.

Piedmont Veterinary Medical Association, the last Friday of each month. John G. Martin, Boone, N. Car., secretary.

OHIO—Cuyahoga County Veterinary Medical Association, the first Wednesday of each month, September through May (except January), at 9:00 p.m. at the Carter Hotel, Cleveland, Ohio. Ed. R. Jacobs, 5522 Pearl Rd., Cleveland, Ohio, secretary.

OKLAHOMA—Oklahoma County Veterinary Medical Association, the second Wednesday of every month, 7:30 p.m., Patrick's Foods Cafe, 1016 N.W. 23rd St., Oklahoma City. Forrest H. Stockton, 2716 S.W. 29th St., Oklahoma City, Okla., secretary.

Tulsa Veterinary Medical Association, the third Thursday of each month in Directors' Parlor of the Brookside State Bank, Tulsa, Okla. Don L. Hohmann, 538 S. Madison St., Tulsa, Okla., secretary.

PENNSYLVANIA—Keystone Veterinary Medical Association, the fourth Wednesday of each month at the University of Pennsylvania School of Veterinary Medicine, 39th and Woodland Ave., Philadelphia 4, Pa. Raymond C. Snyder, 39th and Woodland Ave., Philadelphia 4, Pa., secretary.

SOUTH CAROLINA—Piedmont Veterinary Medical Association, the third Wednesday of each month at the Fairforest Hotel, Union, S. Car. Worth Lanier, York, S. Car., secretary.

TEXAS—Coastal Bend Veterinary Association, the second Wednesday of each month. J. Marvin Prewitt, 4141 Lexington Blvd., Corpus Christi, Texas, secretary.

VIRGINIA—Central Virginia Veterinarians' Association, the third Thursday of each month at the William Byrd Hotel in Richmond at 8:00 p.m. M. R. Levy, 312 W. Cary St., Richmond 20, Va., secretary.

Northern Virginia Veterinary Society, the second Wednesday of every third month. Meeting place announced by letter. H. C. Newman, Box 145, Merrifield, secretary. Southwest Virginia Veterinary Medical Association, the first Thursday of each month. I. D. Wilson, Blacksburg, secretary.

WASHINGTON—Seattle Veterinary Medical Association, the third Monday of each month, Magnolia American Legion Hall, 2870 32nd W., Seattle, Wash. William S. Green, 9637 S. E. 36th, Mercer Island, Wash., secretary.

South Puget Sound Veterinary Association, the second Thursday of each month except July and August. O. L. Bailey, P. O. Box 906, Olympia, Wash., secretary.

WEST VIRGINIA—Kyowva (Ky., Ohio, W. Va.) Veterinary Medical Association, the second Thursday of each month in the Hotel Prichard, Huntington, W. Va., at 8:30 p.m. Harry J. Fallon, 200 5th St., W. Huntington, W. Va., secretary.

Central Wisconsin Veterinary Medical Association, the second Tuesday of each quarter (March, June, Sept., Dec.). R. J. O'Hern, P. O. Box 617, Cumberland, Wis., secretary.

Dane County Veterinary Medical Association, the second Thursday of each month. Dr. E. P. Pope, 409 Farley Ave., Madison, Wis., secretary.

WISCONSIN—Milwaukee Veterinary Medical Association, the third Tuesday of each month, at the Half-Way House, Blue Mound Rd. George F. Lynch, 201 West Devon St., Milwaukee 17, Wis., secretary.

Northeastern Wisconsin Veterinary Medical Association, the third Wednesday in April. William Madison, 218 E. Washington St., Appleton, Wis., secretary.

Rock Valley Veterinary Medical Association, the first Wednesday of each month. W. E. Lyle, P. O. Box 107, Deerfield, Wis., secretary.

Southeastern Veterinary Medical Association, the third Thursday of each month. John R. Curtis, 419 Cook St., Portage, Wis., secretary.

Wisconsin Valley Veterinary Medical Association, the second Tuesday of every other month. E. S. Scobell, Rt. 2, Wausau, Wis., secretary.

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Wanted—Veterinarians

Recognized distributor of nationally known veterinary products (antibiotics, pharmaceuticals, surgicals, etc.) offers exceptional opportunity to experienced salesmen now calling on veterinarians. Top commissions, protected territories. No objection to other lines. Write full details in confidence. Address "Box H 2," c/o JOURNAL of the AVMA.

Veterinarian wanted for staff of large hospital for small animals in New York City. Opportunity. Address "Box H 1," c/o JOURNAL of the AVMA.

Assistant wanted for small animal hospital in central Illinois; possibility for eventual partnership or lease. Will consider June graduate. State references, experience, and salary expected. Address "Box H 3," c/o JOURNAL of the AVMA.

Veterinarians wanted for regulatory field work in Nevada; ARS qualifications; no license required. Temporary and permanent positions available. Address Dr. J. B. Key, Secretary, P.O. Box 467, Tonopah, Nev.

Veterinarian wanted with advanced training and experience in bacteriology and virology for a poultry disease research position in a biological laboratory. Applicant should submit brief information on background, references, and general qualifications for interview appointment. Address "Box G 38," c/o JOURNAL of the AVMA.

Opportunity for well-experienced veterinarian to be moderately busy in established large animal prac-

tice near Chicago. Address "Box H 13," c/o JOURNAL of the AVMA.

Growing industrial research unit has new openings for 2 research and 2 development veterinarians. Investigations include antibiotics, vitamins, steroids, and related areas. Give complete details including salary requirements, training, experience, areas of interest, etc., in first letter. All replies held in strictest confidence. Address "Box H 13," c/o JOURNAL of the AVMA.

Experienced small animal practitioner wanted to take complete charge of small animal hospital on Long Island, N.Y., for 6 months to 1 year; possibility of purchase after that period. Send complete resumé promptly, stating salary or other arrangements desired and previous experience and availability. Address "Box H 17," c/o JOURNAL of the AVMA.

Veterinarian wanted as assistant in modern small animal hospital in suburb of New York City. Excellent opportunity and salary. Address "Box G 11," c/o JOURNAL of the AVMA.

Capable veterinarian wanted to take complete charge modern, air-conditioned small animal hospital. Salary and commission with bright, lucrative future; give full information. Must have Maryland license. Address "Box H 16," c/o JOURNAL of the AVMA.

Wanted veterinarian to assist in small animal hospital. Opportunity to purchase if qualified. In same location 35 years. Dr. Alexander Slawson, 2414 Amsterdam Ave., New York 33, N.Y.

Wanted—Positions

Female veterinarian, experienced, desires position as assistant in small animal practice. Licensed in Pennsylvania and New Jersey. Address "Box H 5," c/o JOURNAL of the AVMA.

Graduate, API, 1955, will separate from Air Force in August. Age 27, married. Desire position with small animal practitioner; prefer job leading to permanent position; do not mind work. Address "Box H 6," c/o JOURNAL of the AVMA.

Experienced veterinarian, 31, married, desires position with small animal practitioner in eastern Texas. Address "Box H 15," c/o JOURNAL of the AVMA.

Experienced recent Iowa graduate desires position leading to partnership in Middlewest mixed practice. Married. Leaving military service October first. Address "Box H 14," c/o JOURNAL of the AVMA.

Young, married veterinarian with M.S. degree and small animal experience desires position in small animal practice in Wisconsin or Chicago area; will consider elsewhere. Excellent references. Will consider leasing or buying. Address "Box H 9," c/o JOURNAL of the AVMA.

Graduate, 1956, approved school, experienced, mixed practice, desires position in mixed practice leading to partnership or lease. Married, veteran; no special location preferred. Address "Box G 35," c/o JOURNAL of the AVMA.

Wanted—Practices

Small animal practice wanted in southeastern Texas by experienced veterinarian. Will consider assistantship with option to lease or purchase. Address "Box H 20," c/o JOURNAL of the AVMA.

Want to purchase or lease well-established, small animal hospital with living quarters; Missouri, Illinois, Indiana. Willing to work for owner 1 or 2 years prior to purchasing or leasing. All replies acknowledged and held confidential. Address "Box H 12," c/o JOURNAL of the AVMA.

Small animal hospital wanted by well-qualified, experienced, young veterinarian. Would buy, lease, or take partnership. Will consider any location. All replies held confidential and answered. Address "Box H 7," c/o JOURNAL of the AVMA.

For Rent

Large 6-room house; excellent condition, on busy 4-lane highway, Scarsdale, N.Y. Used 30 years as a boarding kennel; excellent site for a veterinarian. For rent at $275 per month. Address D. Sapey, 636 Central Ave., Scarsdale, N.Y.

$100 Reward

Missing since February 1, large male boxer; 7 years old, well mannered, well trained; answers to name of "Kip." Light fawn, white strip between eyes, black mask, white breast, 4 white feet. May be easily identified by large incision scar showing stitches plainly on right rear leg from below hip to knee. $100.00 reward will be paid upon return of this dog or positive information leading to his whereabouts. Call Collect—Classic Furniture Sales, Gladstone 2—9301, Zanesville, Ohio.

(CORRESPONDENCE—*Continued from adv. p. 4*)

tling the trachea; and of infectious dermatitis by a cursory examination of the coat. While no one would claim to find all incipient cases this way, how much more confident would we feel if we were able to spend the six minutes recommended? I wouldn't guarantee an animal to be free of distemper, hepatitis, or hard pad, even if I spent a half hour examining him.

The suggestion that more complete examinations be paid for by the exhibitor prior to the show has many flaws in it, not the least being that a large percentage of the exhibitors could not afford such an examination when they take several dogs to shows every weekend. The alternate suggestion that no examination be attempted is even farther from the point. As it stands now, exhibitors seldom bring frankly sick dogs to dog shows, knowing that they will be rejected. Without the authority of the veterinarian in attendance, some might be tempted to show them anyway.

Let us take our examination seriously, checking attitude, membranes, and general tone and condition of skin, and rubbing the throat to try to elicit a cough. Then we can hold out the suspicious dogs for more compete examinations. In this way, we will perform a worthwhile service that will be appreciated by both the dog show officials and the exhibitors and one which can not be performed by anyone else.

The American Kennel Club has followed the policy that the veterinarian has the ultimate authority to accept or reject dogs for reasons of health or anatomic malformations. Any failure of dog show officials to support a ruling of a veterinarian should be referred to the AKC.

Respectfully,
s/John E. Craige, V.M.D.
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For Sale—lucrative Massachusetts mixed practice. Fine opportunity for progressive young veterinarian. No competition. Address "Box H 19," c/o JOURNAL of the AVMA.

Only veterinarian in county seat town of 1,300, southeast South Dakota. Pig vaccinations per year, 27,000 to 30,000. Will sell for $15,000 cash; please do not inquire unless funds are sufficient. Address "Box G 13," c/o JOURNAL of the AVMA.

Small animal hospital for sale; well-established, excellent location, Piedmont, N. C.; 35 kennels and outside runs. Gross, $20,000; price, $13,500, includes hospital, large lot, drugs, and equipment. Will finance $7,500. Address "Box E 11," c/o JOURNAL of the AVMA.

proven results in these diseases of small animals

CANINE TRACHEOBRONCHITIS (KENNEL COUGH). In one study of 12 cases, FURADANTIN stopped the cough completely within 3 to 7 days.[1]

URINARY TRACT INFECTIONS. Extensively used in human genitourinary tract infections, FURADANTIN has also produced impressive clinical results in the treatment of bacterial nephritis and cystitis of dogs and cats.[2]

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Preliminary data point to new indications for FURADANTIN. Various reports describe encouraging results with FURADANTIN in the treatment of vaginitis in the bitch and genitourinary tract infections of mares.[2] Another article concludes that FURADANTIN is an excellent adjunct to surgery in the treatment of prostatic abscess in the dog.[3]

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REFERENCES: 1. Mosier, J. E.: Vet. M. 50:605 (Nov.) 1955.
2. Belloff, G. B.: Calif. Vet. 9:27 (Sept.-Oct.) 1956.
3. Pollock, S.: J. Am. Vet. M. Ass. 129:274 (Sept.) 1956.

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Long-established, good mixed practice for sale in eastern Nebraska. No real estate. Can be financed. Address "Box H 4," c/o JOURNAL of the AVMA.

Modern small animal hospital and business for sale in large, progressive Florida city; equipped; $19,500. Address "Box H 10," c/o JOURNAL of the AVMA.

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Broad clinical application Paxital is useful to eliminate barking and relieve nervousness or tension, especially in hospitalized animals. It is of value to reduce biting and scratching in skin conditions . . . for minor surgery when a general anesthetic is contraindicated or undesirable . . . as an adjunct in major surgery to permit smoother induction of anesthesia and an uneventful recovery (and to reduce the amount of barbiturates necessary) . . . to counteract shock and as an antiemetic.

Dosage: Average dose (for 20 to 30 lb. dog): *orally*—50 to 100 mg. two or three times daily, as indicated; *parenterally*—2 cc. (50 mg.). Paxital may be administered intravenously, intramuscularly or subcutaneously. Occasionally, an additional 2 cc. may be required to obtain the desired clinical response. Tranquilization is obtained usually within 45 minutes following oral administration. Onset of action following parenteral administration is more rapid.

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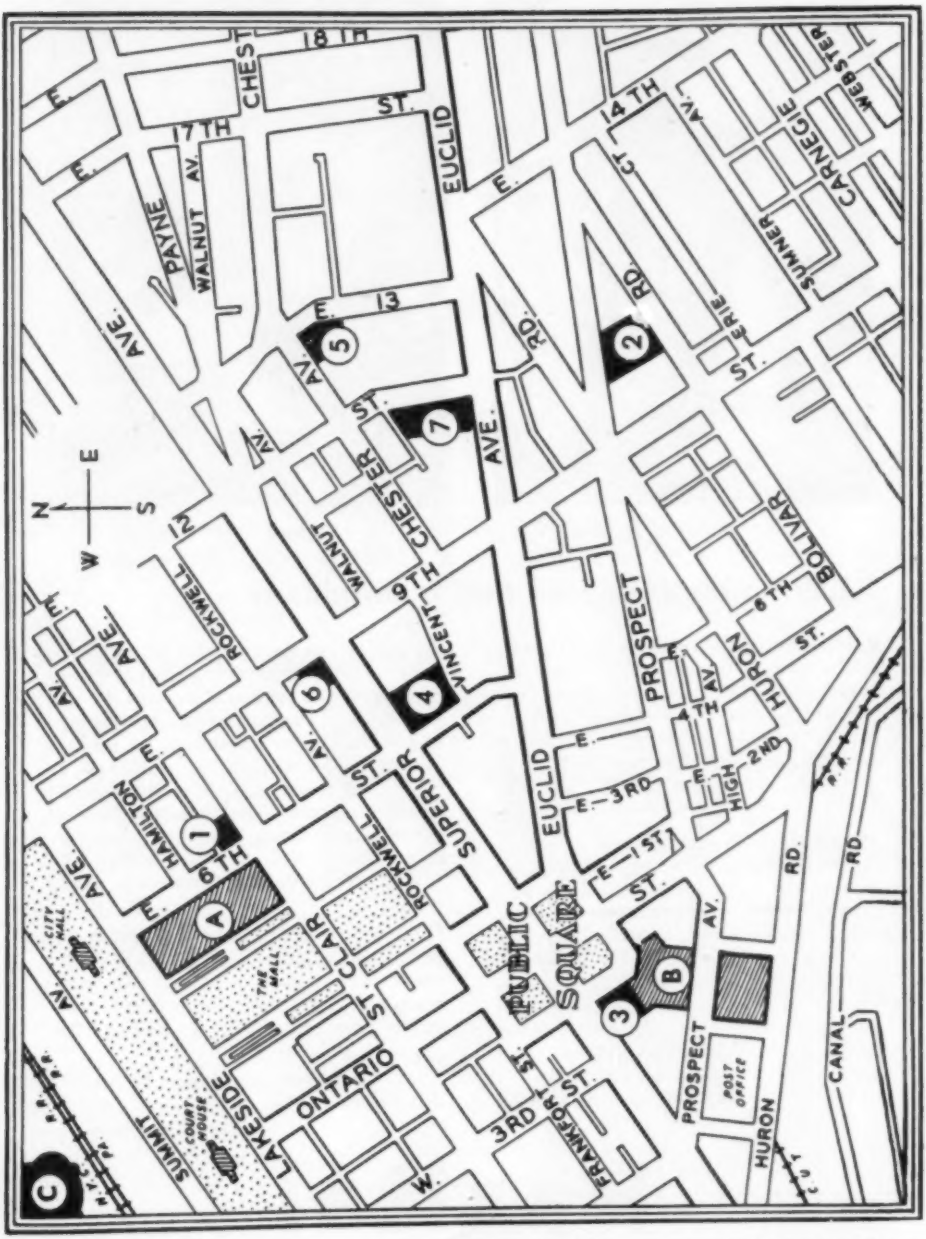

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C. Stadium—Home of the Indians and the Browns

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2. Carter Hotel
3. Cleveland Hotel
4. Hollenden Hotel
5. Manger Hotel
6. Olmsted Hotel
7. Statler Hotel

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All requests for hotel accommodations will be handled by a Housing Bureau in cooperation with the Committee on Local Arrangements. The Bureau will clear all requests and confirm reservations.

Hotels and Rate Schedule

Hotel	Single	Double	Twin	Suite
1. Auditorium	$4.75- 8.00	$ 7.50-10.00	$10.00-12.00	$25.00
2. Carter	$5.50- 9.25	$ 8.50-13.50	$ 9.50-14.25	$26.50-36.50* $40.00-48.25†
3. Cleveland	$6.50-11.00	$ 9.00-14.00	$10.50-20.00	$20.00-55.00* $44.00-70.00†
4. Hollenden	$5.00- 9.00	$ 8.00-12.00	$ 9.00-14.00	$20.00-30.00* $30.00-60.00†
5. Manger	$5.00- 9.00	$ 7.00- 9.00	$ 9.00-13.00	$18.00-45.00* $36.00-75.00†
6. Olmsted	$4.25- 9.00	$ 7.00-11.00	$ 8.50-11.00	$17.00-20.00
7. Statler	$6.00-13.00	$10.00-16.00	$11.00-18.50	$24.00-32.00* $46.50-48.50†

*—2-room suite
†—3-room suite

Tear Here

RESERVATION FORM — AVMA CONVENTION — CLEVELAND

To: HOUSING BUREAU, Cleveland Convention and Visitors Bureau, Inc., 511 Terminal Tower, Cleveland 13, Ohio.

Hotel

(Three choices MUST be shown)

First choice hotel _____

Second choice hotel _____

Third choice hotel _____

Accommodations

_____ Single Room(s) @ $_____

_____ Double Room(s) @ $_____

_____ Twin-bed Room(s) @ $_____

_____ 2-room suite @ $_____

_____ 3-room suite @ $_____

Arriving on (date) _____ at _____ ( ) a.m. ( ) p.m.

Departing on (date) _____

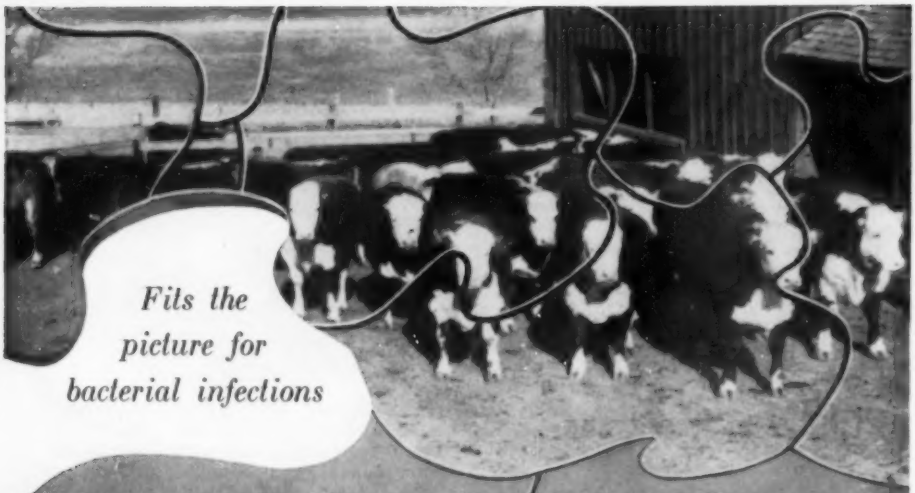
Will be occupied by (attach list of additional names if necessary).

Your Name (print or type) _____

Street Address _____

City _____ Zone _____ State or Province _____

Index to Advertisers in This Issue



Fits the picture for bacterial infections

SULBEN

Sulben has a wide scope of indications that includes Enteritis, Calf Scours, Hemorrhagic Septicemia, Pneumonia, Foot Rot, Metritis, Mastitis, Coccidiosis, Fowl Cholera, Calf Diphtheria, and many other conditions.

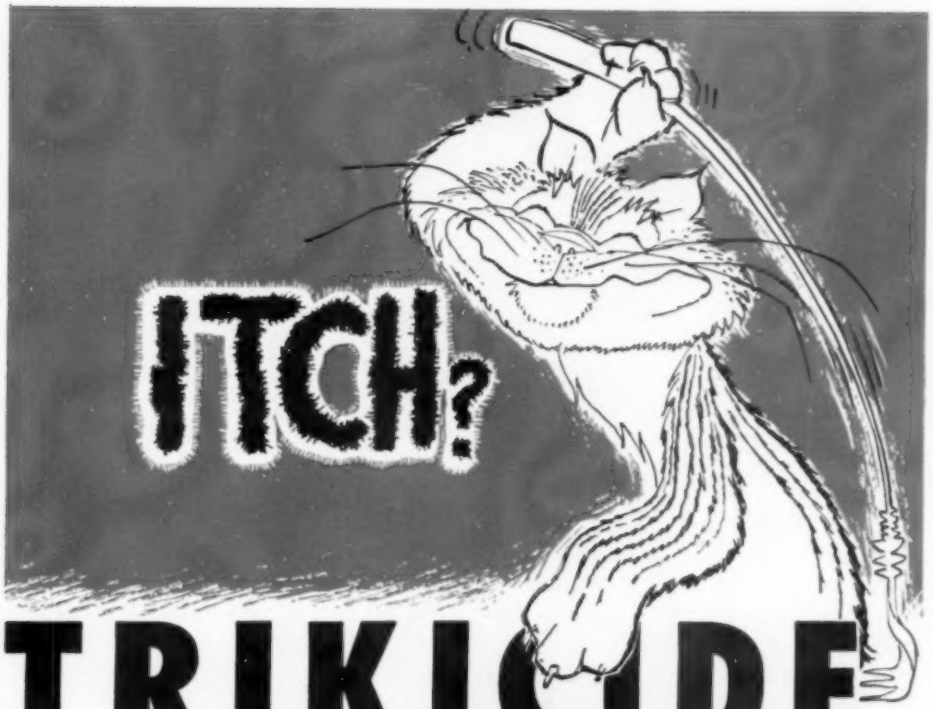
Sulben (sulfabenzamide) is a relatively non-toxic agent, well absorbed, and excreted in a reasonable length of time.

It is economical and dependable. A single dose is usually sufficient, however doses can be repeated every 24 hours or more often if necessary.

Sulben comes in solution for oral use, in 60 gr. creased Tabsules, and in 240 gr. creased Taboles.®

Sulben makes a profitable dispensing item.

HAVER-GLOVER
division of
HAVER / LOCKHART LABORATORIES
Kansas City, Missouri



TRIKICIDE

Trikicide Powder is a highly effective bactericide and fungicide for the treatment of dermatoses in both cats and dogs. A "dry" medication, it is recommended for preventing and treating ringworm, moist eczema and other weeping skin lesions, and ear canker.

The primary ingredients of Trikicide powder are 2, 2'-methylene-bis (4 chlorophenol) and oxyquinoline benzoate. Nontoxic to the host, this specially processed powder clings to the skin, promoting contact of the active ingredients with the causative agents.

Supplied: **Trikicide Powder**—Pkg. 12 x 1¼ oz. plastic spray bottles; 1 lb. hospital size.
Trikicide Solution—12 x 4 oz. plastic squeeze bottles; gallon bottles.

Other Haver-Lockhart products for the treatment of dermatoses in small animals.

FATONE POWDER AND CAPSULES
for the treatment of skin diseases due to fatty acid deficiency.

BLUSOL
parenteral for systemic treatment of protozoan infections and selected skin conditions.

Division of
HAVER/LOCKHART LABORATORIES
Kansas City, Missouri

Immediate protection!
durable immunity!
No postvaccination flare-ups!
No live virus premise contamination!

available in vials of
2 doses
5 doses
10 doses
25 doses
50 doses

Jensen-Salsbery Laboratories, Inc.
Kansas City, Missouri